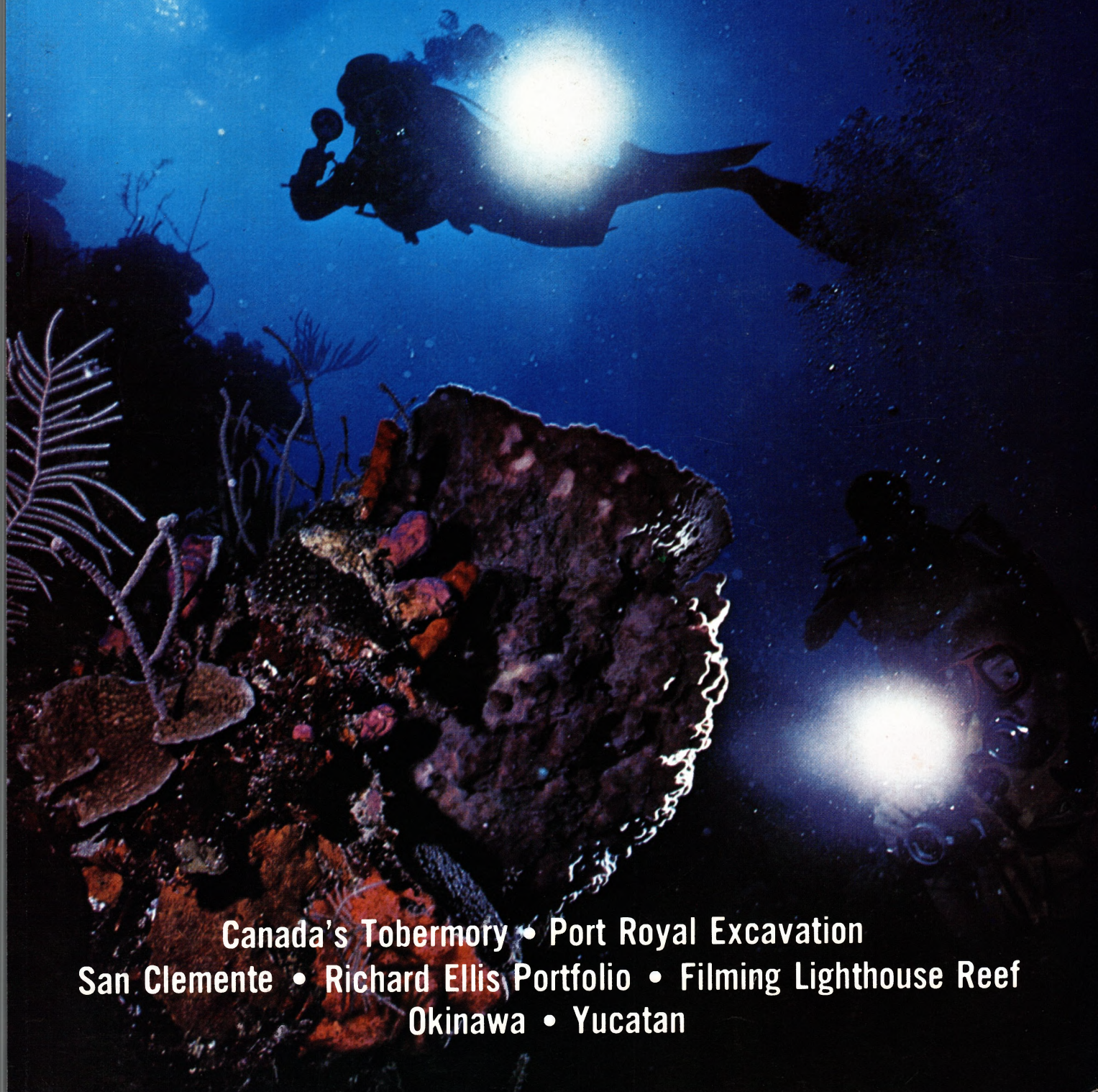


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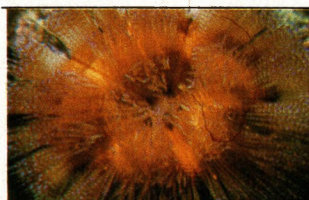
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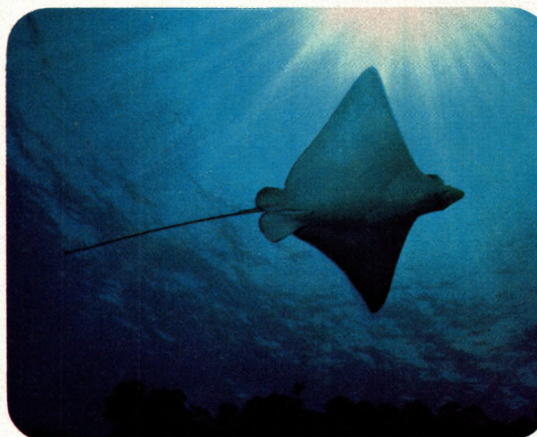
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# World Wide Diving Adventures



Photos by Carl Roessler



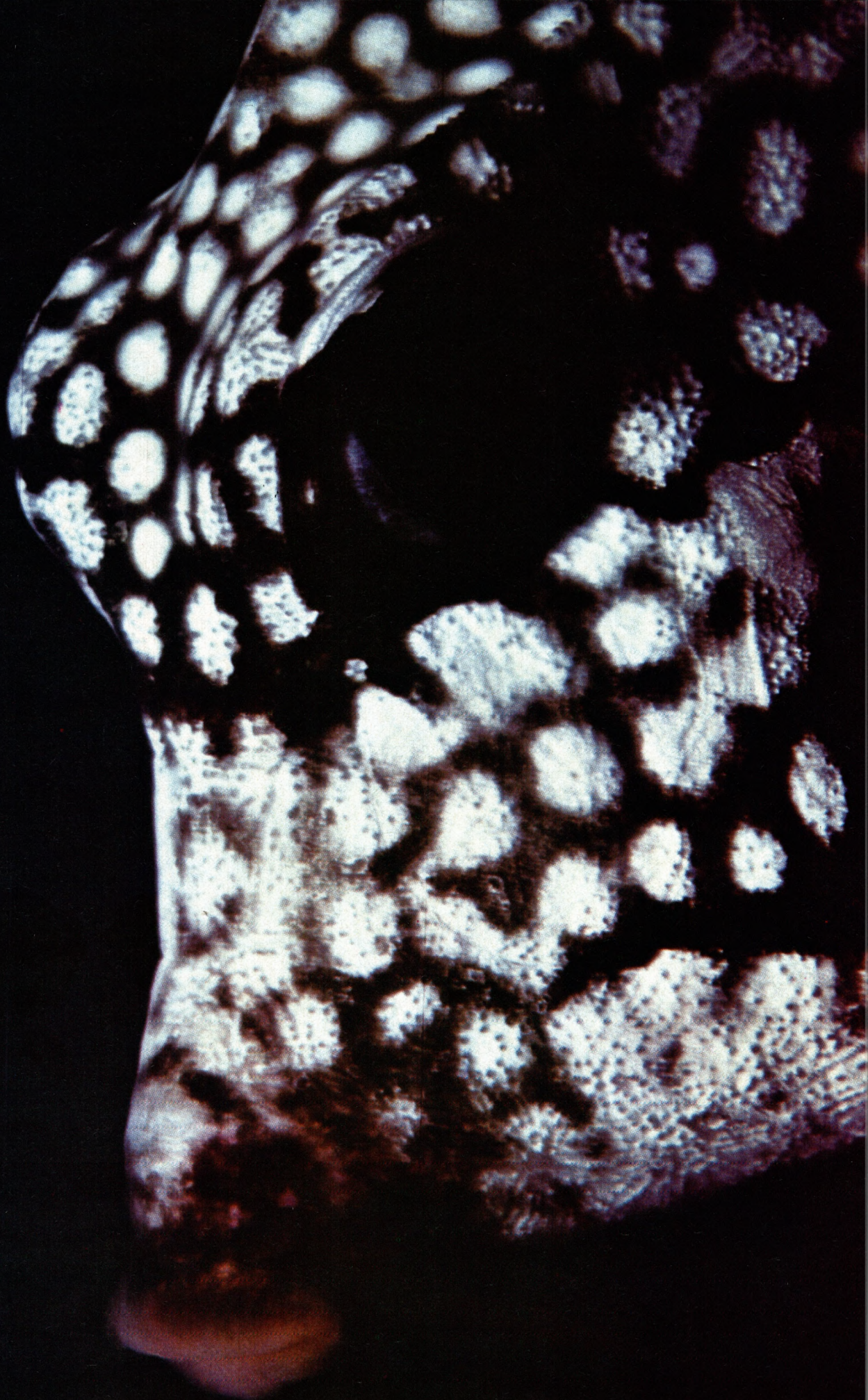
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# Editorial

FROM THE PUBLISHER



This issue marks the beginning of *Sport Diver's* second year of publication. In it we have tried to report on some of the things that have made this year's spring/summer season the busiest and best since 1974. Manufacturers and retailers are reporting record sales as thousands of new divers are being introduced to the ocean and older members of the diving community replace and upgrade their existing equipment for the annual vacation pilgrimage.

For many of these divers travel is no longer a dream as the price of travel continues to become more and more of a bargain. Through travel-incentive programs such as Eastern Airline's unlimited fare, (destinations to St. Croix, St. Thomas and various other Caribbean islands) the diver is now able to combine that once-a-year family vacation in the sun and surf.

Divers seem to be traveling farther and in greater numbers to attend film festivals, conventions and social events this year too. All of the major events held this spring showed an increase in attendance indicating an upsurge in interest among both divers and the general public (story page 61). This fall most of the activities will be taking place in California, with the NASDS Dive-In and NAUI's IQ-10 heading the list.

Sport competitions and television are almost synonymous these days and where you find one, you usually find the other. In June, the crew of the CBS Sports Spectacular found themselves in St. Thomas, U.S.V.I., to film an underwater competition segment. They hope to match the number one underwater bad guy, the shark, against three teams of experienced and cautious shark-taggers. The object of this International Shark Tagging Competition was to determine which team could implant the greatest number of fisheries information tags on free-swimming sharks. The crew chummed the water off the Virgin Islands for a full week before they attracted any sharks for the teams to chase, once again demonstrating the true passive nature of the undisturbed shark.

Passivity was not among the notable qualities of another "star shark", the mechanical munching machine, "Jaws II". This time the impact on the diving industry should be only a ripple compared to that of the original *Jaws* in 1974. The new version has its female shark protagonist chasing down a moving water skier and an amphibious helicopter! Now that we've got "Wife of Jaws" perhaps we're ready for "Jaws Meets Godzilla". Fortunately the script writers went a little too far

with this one and as audience reaction shows, unlike some movie monsters, the viewers can only swallow so much.

To counter the misinformation about the sharks that is widespread and so well-promoted, we have dedicated this issue to those who understand the world's most well adapted creature. As the first section of a four-part series from America's foremost marine illustrator, the "Richard Ellis Portfolio", we have displayed some of his incredible shark paintings. Also in this issue, Paul Hill, author of *The Edible Sea*, reveals his secrets for making a meal from shark meat.

The bounty of the ocean belongs to those who understand and use it wisely — as divers it is our obligation to educate those who have not had our kind of first-hand experience so that one day there may truly be a total commitment to saving our seas.



RH Stewart



# LETTERS

Dear Sport Diver,

In spite of all the cleaning shrimp pictured on your cover (Vol. 2/1st Quarter 78) the parasites seem to be doing quite well on the moray eel. The photo shows one copepod with egg strings above the mouth and another behind the right eye. I also noted a large female parasitic isopod (*Anilocra laticauda* Milne Edwards) under the eye of a red hind on page 96 of the same issue. Keep up the good work!

**Ernest H. Williams, Ph.D.**  
Marine Parasitologist  
University of Puerto Rico

Dear Sirs,

The Summer 77 edition of *Sport Diver* has been forwarded to this office from our Guam facility. We would like to congratulate you on publishing the kind of magazine diving has long needed. The graphics are outstanding and the content informative. Here we might comment on Mr. Matheny's article to note that his remarks also apply very much to the situation confronting sport diving in Japan. The drop-out rate here is also quite high and caused by many of the same factors.

We would like to add your back issues to our library and begin our subscription with the Spring 1978 issue. Please accept our best wishes for your continued success.

**Eric M. von Hurst**  
Executive Officer  
Oceanic Institute  
Tokyo, Japan

Dear Sport Diver,

Let me second you on your wise statement of the importance of letting each single voice be heard on issues which concern and confront us.

I am on the staff of the Northern Kentucky Chamber of Commerce and for the past nine years we have invited our Congressmen to visit with our membership monthly, at an off-the-cuff luncheon meeting.

Time and time again these gentlemen comment about the way their mail is running on a particular issue. To me, the consideration these men give to their mail points out the vital importance of each of us taking the time to voice our thoughts on issues of the day. Particularly on issues of such magnitude as to effect the future of our civilization as we know it.

Keep up the good work of bringing the issues before us. On behalf of the

Sport Diver

diving community of Northern Kentucky, we wish you well with your magazine.

**Will Young, Director**  
Member Relations and Services

Dear Sport Diver,

This is to acknowledge that we were the lucky recipients of your prizes at the Submariner's Treasure Hunt at Presqu'ile Park, Ontario. My daughter got her C-card last year and she was thrilled to think that, out of 700 divers, we stood a chance of winning something.

After a 15-minute underwater search we found a yellow flag that entitled us to a t-shirt each. Diving is a great sport but the initial investment is pretty steep. It's occasions like this and the generosity of the industry that gives the novice a lift. Once again, thanks.

**John V. Wood**  
Thornhill, Ontario

Dear Sport Diver,

As a concerned diver, I was greatly interested in your Washington Currents article "Uncle Sam May Need You". I feel that sport divers can play an important role in government and university ecology programs and I would like to do more than just sightseeing on the bottom.

Perhaps the government is beginning to realize the importance of the role that diving will play in the future to come.

**Carlton D. Barros**  
Wareham, Mass.

Dear Editor,

I don't usually write letters to magazines, but I feel I should let you know someone noticed.

I have been reading *Skin Diver* for years and thought it was quite good. Recently, I have noticed several changes in their articles and layouts that suggest to me that they are aware of your impact on readers.

They have increased the amount of pages per issue, use more color than ever before, and some articles, like the one on sharks teeth, seem to be direct copies of your layouts.

I am sure that a young publication such as *Sport Diver* must be complimented by this change in style. After all, imitation is the sincerest form of flattery. Keep up the good work.

**James T. Wade**  
Clemson, S.C.

Dear Sport Diver,

Being a newcomer to diving I have been anxious to read anything I can find concerning the sport. I bought a copy of

*continued page 8*

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# LETTERS

continued from page 6

*Sport Diver*, Vol. 2/First Quarter, at a dive store in Manhattan.

Through *Sport Diver's* use of bright, informative text and fabulous photography I have been pulled into the sport hook, line and sinker. I would also like to commend *Sport Diver's* unusual and visually stimulating layout. Bravo!

**Kevin C. Marshall**  
Corona, NY

Dear Sirs,

As a former magazine publisher, free-lance photographer, and diver, I would like to praise the staff of *Sport Diver*. To produce such a magazine that combines printing quality, contents, and huge amounts of color that yours does, requires a tremendous amount of labor. Not to mention the "green stuff".

I would also like to say something about the Sari Gains controversy. Personally, I think anyone who seriously takes offense to Ms. Gains, or *Sport Diver*, for running her ads must be hard up for something to complain about, or possibly very jealous. Does anyone really think that Ms. Gains was coerced into doing those shots? The financial rewards were probably quite reasonable, not to mention the benefits from the international exposure (no pun intended).

Although I consider ads with Ms. Gains as pleasant additions to *Sport Diver's* make-up, I don't believe they could be seriously classified as self/female rip-offs or as girly magazine, cheesecake photos.

There are more important issues to concern one's self with.

**Steven T. Cast**  
Denver, Colorado

Sir;

I have just received my first copy of your magazine and I am impressed by the quality of the publication.

As a scuba instructor I often refer to current publications to emphasize a point or to stimulate interest on a subject. The information contained in your magazine is of interest and value to serious divers everywhere.

**Stanley A. Synkosl, Jr.**  
Worcester, Mass.

Dear *Sport Diver*,

In your *Sport Diver* journal, second quarter 1978, in the article "The Subject is Whales," by Stan Minasian, I quote: "the

*Sport Diver*

turn of the century discovery of the Coelacanth, or the more recent dredging up of a decomposing plesiosaurus in the Indian Ocean . . ."

I am interested in the plesiosaurus. Please give me references regarding the dredging up of a plesiosaurus, and if it was seen by experts, who, and what was their report.

Sorry, but I question a 70 million-year-old, extinct animal being alive, especially as the plesiosaurus was an air breathing animal.

**David Andrews**  
Victoria, B.C.

*A carcass was dredged up by the Japanese trawler, Zuiyo Maru, on April 25, 1977 off the coast of New Zealand. Fearing the rotting corpse would contaminate their fish catch, the fishermen dropped the body overboard, but not before foreman Michihiko Yano measured the cadaver, made five photographs and took tissue samples. Both Yano and his evidence were closely examined by Professors Ikuo Obata and Hiroshi Ozaki of Japan's National Science Museum and Professor Toshio Kasuya of Tokyo University's Marine Research Center, all eminent scientists in their fields. In addition, the tissue samples were analyzed by Dr. Shigeru Kimura, a biochemist at Tokyo University using ion-exchange chromatography. Their conclusion — that the body was not that of any known sea creature, definitely not mammalian (ruling out seals, sea lions or whales) and the general morphology seems to fit the plesiosaur. They concluded also that from the available evidence they could not definitely state what the creature was. For more details check the November 1977 issue of Oceans Magazine.*

Dear *Sport Diver*,

I have learned that *Jaws II* is coming this summer. From the report I heard of the preview, the effects could be worse on our industry than *Jaws the First*.

What can we all do to offset another disaster?

**The Diving Bell, Inc.**  
Philadelphia, PA

*Short of an all-out public education program, not a whole lot. In this and all issues of Sport Diver we endeavor to present sharks in the proper context, as seen in our "Edible Sea" selection and the shark paintings by Richard Ellis. Read the editorial on page 5 of this issue.*

## ATTENTION INTERNATIONAL READERS

We sincerely hope that our readers outside of the U.S. enjoy the contents of *Sport Diver Magazine*. *Sport Diver* is truly international in its design and format, and we especially encourage contributors who can submit articles or news releases on diving activities around the world.

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# IN THE NEWS

## Marine Mammal Kills Cut

The number of sea lions, seals and porpoises Japanese fishermen are allowed to catch "accidentally" while fishing in the Bering Sea has been cut by more than 50 per cent for 1978, according to the National Marine Fisheries Service.

The Service has authorized an accidental catch of 1,020 of the marine mammals, compared to an authorized catch of about 2,300 last year. However, in 1977, Japanese fishermen reported catching fewer than 600.

Under the Marine Mammal Protection Act of 1972, fishermen operating within the U.S. 200 mile conservation zone must request permits giving the number of mammals which can be taken by accident. They are usually trapped in nets while feeding in waters where fishing operations are being conducted.

But observers here say the accidental catch figures are probably understated.

They say the true figures may be as much as three times higher.

"The Service has a policy to push," said one official. "It tends to accept the low numbers on face value."

Perhaps the Fisheries Service will soon report no marine mammals were accidentally pulled up in nets. But by that time there may not be any around to get caught.

If this were to happen the logic here would be that a "final solution" has been found.

## NRC Nuclear Hearings

The Nuclear Regulatory Commission (NRC) will continue its series of public hearings into floating off-shore nuclear generating plants capable of producing 1,150 megawatts of power.

The nuclear units, built by Offshore Power Systems, Inc., Jacksonville, Florida, present a tricky list of safety and environmental concerns. No units are operational, so much of the testimony before the NRC is strictly theoretical.

One application is now before the commission submitted by the Public Service Company of New

Jersey, which wants to install nuclear units three miles off the coast of America's newest gambling haven, Atlantic City, New Jersey.

As always, the question remains: What happens if there's an accident?

No one really knows. But the NRC is working on an environmental impact statement which it hopes will give us some of the answers.

If there's a melt-down at sea, "the consequences could be more serious than on land," says one NRC official. Waves and currents, particularly the Gulf Stream, could spread radioactive pollution across the entire Atlantic.

Divers and environmentalists should take more than a passing interest. So far the NRC has taken no official position — and probably won't. It is empowered only to approve or disapprove applications for installation.

The five-member commission, headed by former Brookhaven Laboratories scientist Joseph Hendrie, is willing to inform interested parties about the various phases of the Atlantic City proceedings. It wouldn't hurt to contact the commission in Washington (202-492-7000) and ask to be put on the mailing list.

## IQ-10 Slated

Marking decade of successful annual gatherings, the National Association of Underwater Instructors has scheduled its Tenth International Conference on Diving Education for November 9 through 12, 1978, at the Disneyland Hotel, Anaheim, California.

IQ is the largest annual gathering of instructors, retailers, manufacturers and educators in the world, with this year's convention expected to attract more than 1200 attendees from around the world.

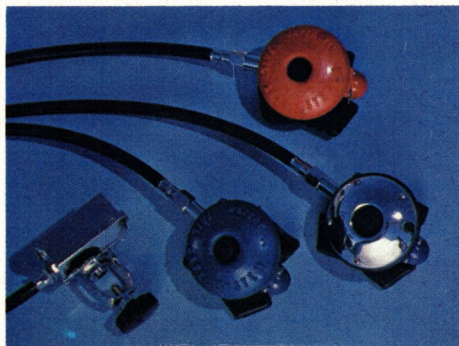
This year, over 60 exhibitors will be displaying what's new in the industry. There will be pool demonstrations of new equipment, debates on the hot issues of the day, workshops, drawings and prizes, and a photography contest. Sunday morning, Jack McKenney will present

*continued on page 82*



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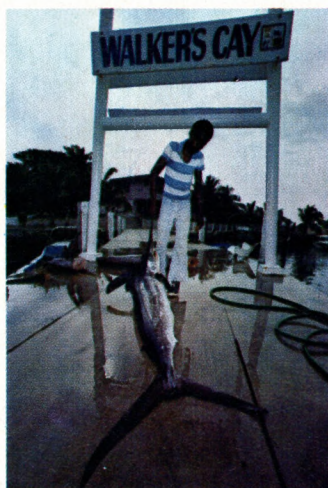
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# WALKER'S CAY



## the top of the Bahamas

by Rick Frehsee

From the 16-seater, twin-Otter our low altitude view produced visions of a perfect get-away island. Shrouded in tropical foliage and higher off the water than most Bahamian isles, Walker's Cay is a green emerald surrounded by a necklace of golden coral set into a cobalt blue sea.

We had left Ft. Lauderdale less than an hour ago and were prepared for a Bahamas scuba adventure here at "The top of the Bahamas", at the northern edge of the Bahama Bank. Although the original clubhouse at Walker's Cay had been here since 1939 and since that time the island has enjoyed the reputation of being the angler and offshore fishermen's dream; scuba divers only recently have begun to appreciate the diving potential along the miles of accessible fringing and banked reef.

The island seems remote but it is a complete self-contained habitat with more creature comforts than most scuba divers are used to, and features an absolutely superb menu second to none. Walker's is a world of its own complete with customs and immigrations service, its own airline, electrical plant, water distillation plant, hotel, marina, gift shop, swimming pool and diving charter services.

Once landed, the flight is personally greeted by the dynamic young manager of the resort, David O'Shaughnessy who personally ushers the arrivals through five minutes of customs and paperwork and loads us aboard a van for a two-minute trip to the hotel and main clubhouse.

From here you're high atop a considerable hill which provides a

picture-perfect view of the gleaming sea through lush foliage. Overhead are shrieking gulls and seabirds. The bird songs that are omnipresent are reminiscent of the background sounds of a Tarzan movie while funny little lizards with curved tails scurry underfoot.

At cocktail hour we were treated to a tasty rum punch and met our experienced Bahamian divemaster Nick Rolle, who carries NAUI and PADI credentials. Nick whetted our appetite for diving with a run down on the boats and equipment and descriptions of the 20 miles of spectacular fringing reefs accessible from the resort.

The clubhouse and dining room are richly furnished with a clean masculine decor. Giant fish mounts attest to the many world-record catches taken in nearby







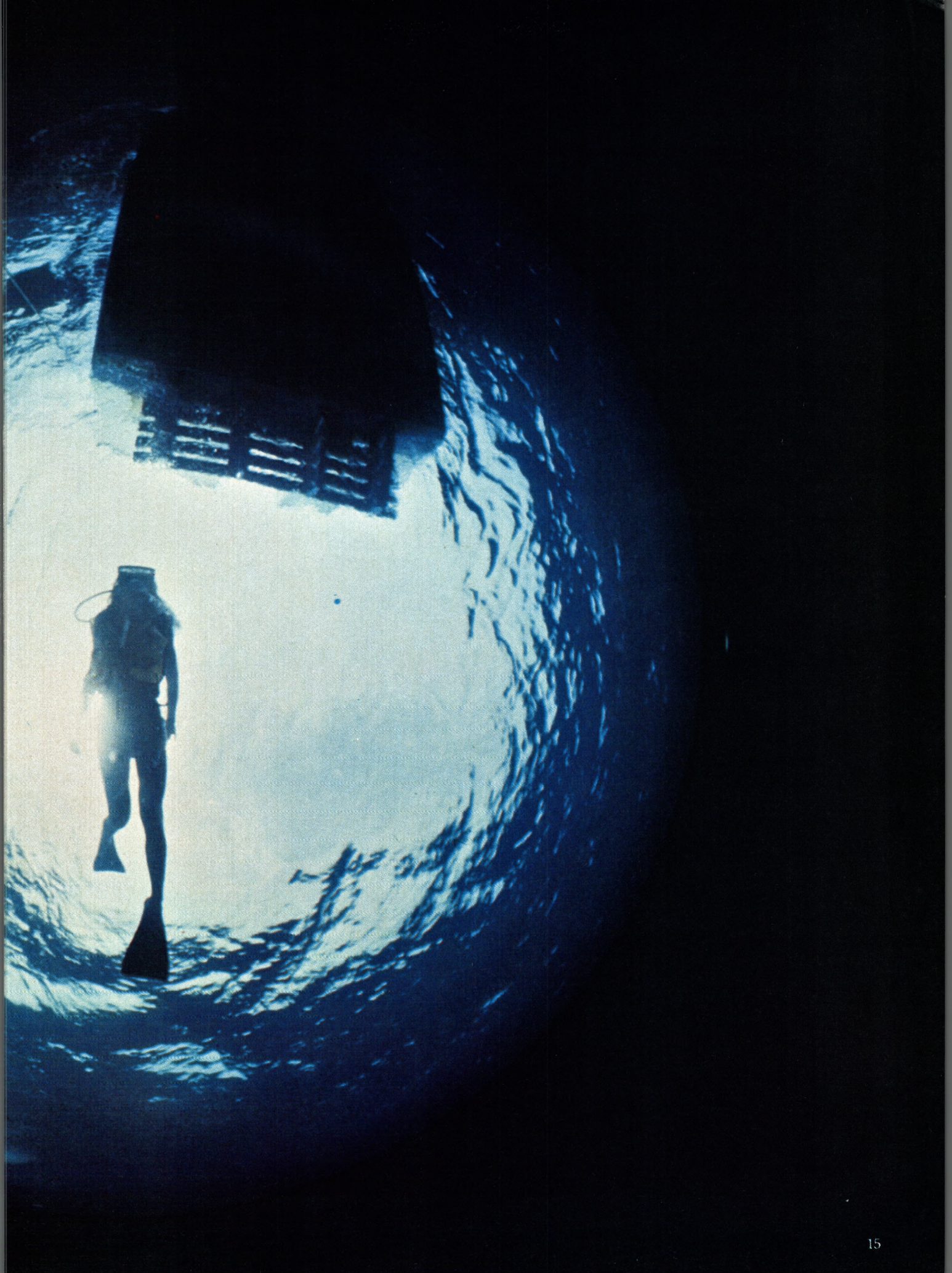


Even the best dive sites and the nicest facilities cannot be complete without a vehicle to transport divers. Walker's gleaming 32-foot single engine fiberglass boat has plenty of room for both comfortable travel and an excessive amount of gear. Even fully loaded the craft is capable of a fairly fast pace. Once arrived at the destination, entering the water is as easy as walking through a gate.



Sport Diver







waters. The menu features freshly caught seafood cooked in every style imaginable for each meal. In addition to local delicacies there are unique gourmet selections such as Eldred preserve; troutlings raised on a trout farm in the Catskills. These are tiny rainbow trout, breaded and served with a special sauce. It is food fit for a king.

The diving as we were to discover the following day is also special. Most local runs average 20-30 minutes and are made aboard a comfortable 32-foot single diesel fiberglass boat well set-up for diving activities. Until recently, the resort only catered to those divers who demanded accessibility to the reefs and a bare minimum of equipment. Now under Nick Rolle's capable leadership, diving is encouraged and promoted with modern well-maintained equipment, a brand new compressor, and a well designed dive craft.

The finest meal available in the Bahamas is the spiny lobster or bug, seen throughout the area's ledges and crevices.



The reefs are healthy and impressive. For the most part they are linear and parallel to the northern edge of the bank. Navigation is tricky as there are large coral heads that project craggy peaks just below the surface rising from the white sandy bottom 30 to 40 feet below. Viewed from below, the heads are enormous. Many are even 100 feet in diameter, 40 feet tall and riddled with caves, undercuts, potholes and chutes. A curious brown algae, a leafy kind of seaweed, covers the top of the reef and along with frothy seaweeds undulates back and forth with gentle swells. A wide variety of reef fishes slither across the reef crest while pugnacious grouper and snapper guard ledges and undercuts.

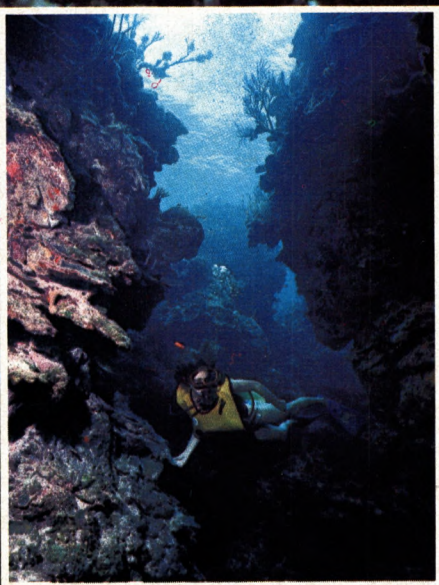




It is the large number of grouper and schools of grunts and porkfish that sets the reef on the top of the lesser Bahamas Bank apart from other diving areas in the western Atlantic and Caribbean. Large schools of several species of grunts and snapper move about the reef floor in unison, like one gigantic organism. The schools are reminiscent of only a few places such as Molasses Reef in Largo.

Several areas that we dived only a short distance from the resort feature enormous heads with extensive caves and ledges providing a kind of underwater Grand Canyon. The reef grows upward and outward to the limits of the environment. The multitude of

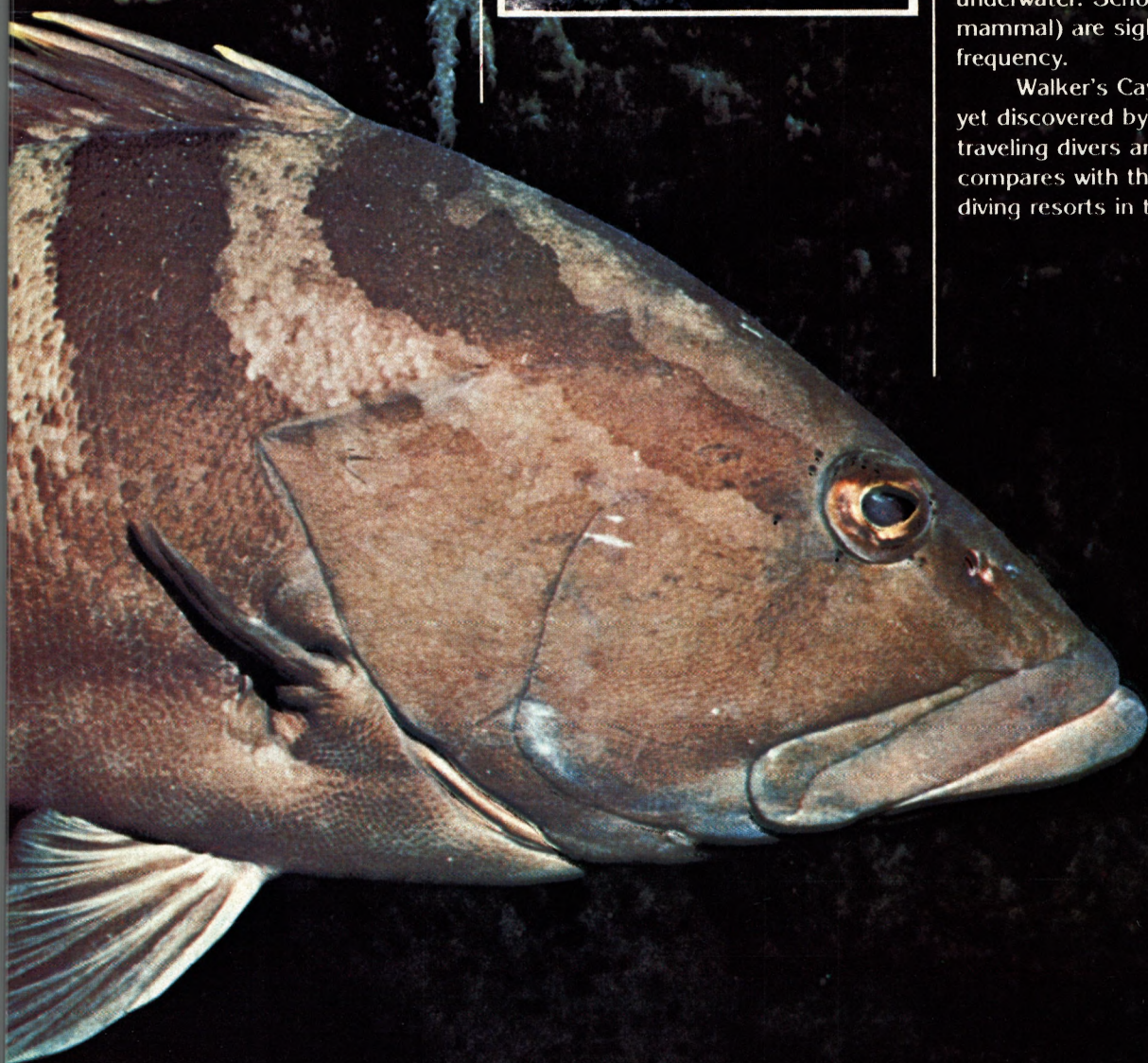
Exploring the maze of crevices is like flying around a mountain's edge covered with bright marine life and a sparkling sky.



boring organisms attack the reef at its area of greatest vulnerability — at its base and outward edges which creates an extensive system of ledges and canyons. In some places the caverns are large enough to drive a truck through, and allow a diver to swim into the very interior of the reef and to feel the pulse of life surrounding.

The visibility is variable depending on local winds and conditions. The average is 80 feet visibility, with 100 feet not unusual during spring, summer and early fall. Winter can produce similar conditions during periods of comparative calm. With so much blue water nearby it is not uncommon to see a good selection pelagic or open-sea varieties. Amberjack, mackerel, and kingfish are common, and here is one of the best places that you might possibly see tuna, marlin, or sailfish underwater. Schools of dolphin (the mammal) are sighted with great frequency.

Walker's Cay is a sleeper, not yet discovered by the majority of traveling divers and a site that compares with the best diving and diving resorts in the world.





# UNDERWATER

There is a new team sport developing on an international scale that is custom-made for divers. It's called underwater hockey and it's guaranteed to improve your water skills and your lung capacity.

Underwater hockey is as fast paced, exhilarating and physically demanding as ice hockey. It requires all the finesse and cooperation of regular team sports, especially so as the action takes place underwater.

The water truly enhances the nature of the competition. Unlike many other competitive sports, physical stature has very little to do with playing ability. The tall man or large man or woman may make a good competitor, but underwater, the smaller person may have advantages of agility and speed.

To play a game of underwater hockey, you'll need two teams, each with six players. A 25 meter pool will provide the best playing area, but smaller pools may be used.

The player's equipment consists of a light low volume mask, a cut down large-bore

snorkel, and some narrow bladed fins for extra maneuverability. In addition, the player carries a small paddle which is used to advance the puck. These paddles or "sticks" can be made of almost anything, metal, wood, or plastic, but  $\frac{3}{4}$ " marine plywood seems to work best. The puck is made of steel. It should be round, about 3" in diameter and  $\frac{1}{8}$ " thick with a rubber bumper around the edge to prevent damage to the pool.

After teams are chosen, two people should be designated as centers. They will face off for the puck in the center of the pool. The object of the game is, of course, to score against your opponent, so the players should concentrate on the puck, and not on covering their man.

When the initial confusion is over, it will become obvious that the position of players is critical. Assign the best breath holders as goalies. The quicker and more agile players should be forwards.

It should be emphasized that underwater hockey is a very demanding sport and someone

should be available in the water to help players in distress. Even players in excellent condition may suffer bruises, scrapes or cramps after an hour-long game.

A quarter lasts 15 minutes, and there is a short break at half time. Teams should switch ends after each quarter because the shallow end does have a definite advantage in defense.

If players are enthusiastic and willing to learn, a good amount of team cohesiveness can be developed in an hour. Before play has gone too far, the participants will learn to develop a sense of anticipation that helps set up plays.

There are certain plays that occur quite often. They soon become easy to recognize and prepare for. One very common play begins in the deep end of the pool at the top of the slope. It usually involves a large number of players vying for control of the puck. Almost invariably, the puck is shot back down the slope.

If a player has positioned himself down and behind the



Richard H. Stewart



# HOCKEY

Story by  
Alistair Wilson

action, the puck will come right to him. In this position he now has half his opponents beaten because they are on the surface out of breath. By sprinting towards his goal and passing to a fresh teammate just before he encounters the opposing goalie, the player has a good chance to set up a successful score.

Underwater hockey is not a spectator sport. To enjoy it you must participate. Divers can use underwater hockey as a training exercise, or as a vehicle for other social events as it quickly creates an atmosphere of camaraderie.

There are currently several sets of rules for playing underwater hockey. Hopefully these will be integrated and codified at the International Underwater Hockey Championship to be held in England in 1979. Meanwhile, you may write to me to receive both the Canadian and the proposed International rules governing the sport.

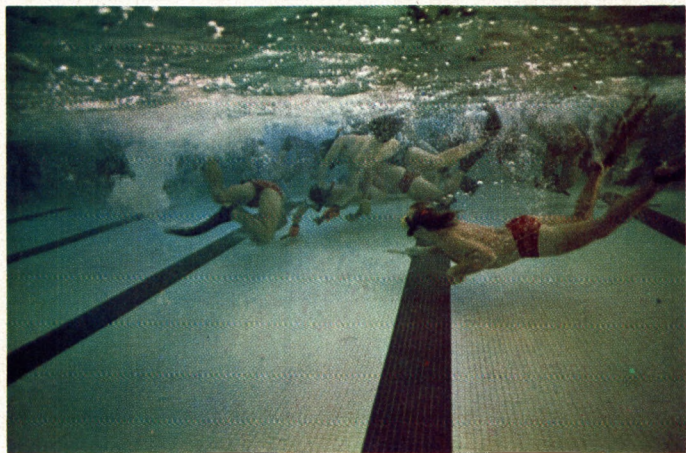
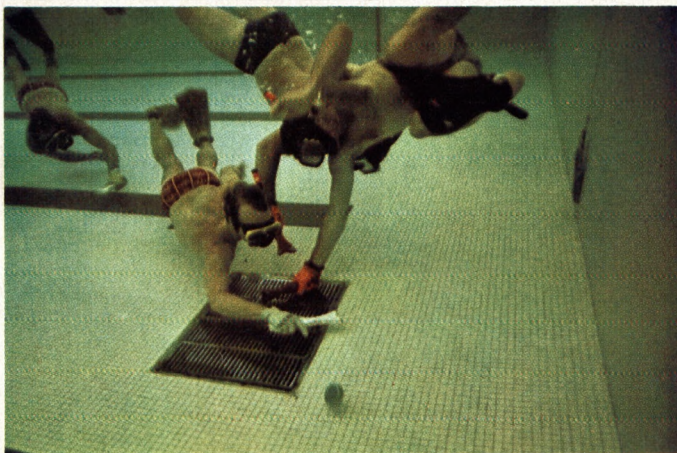
Athletic ability, team pride and sincere enjoyment are the main goals of underwater hockey; goals that may be

achieved with ease by anyone with a deep interest in underwater sport.

The water truly enhances the nature of the competition. Unlike many other competitive sports, physical stature has very little to do with playing ability. The tall man or large man or woman may make a good competitor, but underwater, the smaller person may have advantages of agility and speed.

For more information concerning underwater hockey and a copy of the proposed Canadian and International Rules, contact:  
**Alistair Wilson**  
3096 Sunnyhurst St.  
North Vancouver,  
British Columbia,  
Canada

Richard H. Stewart





FUN 'N SUN  
VACATION

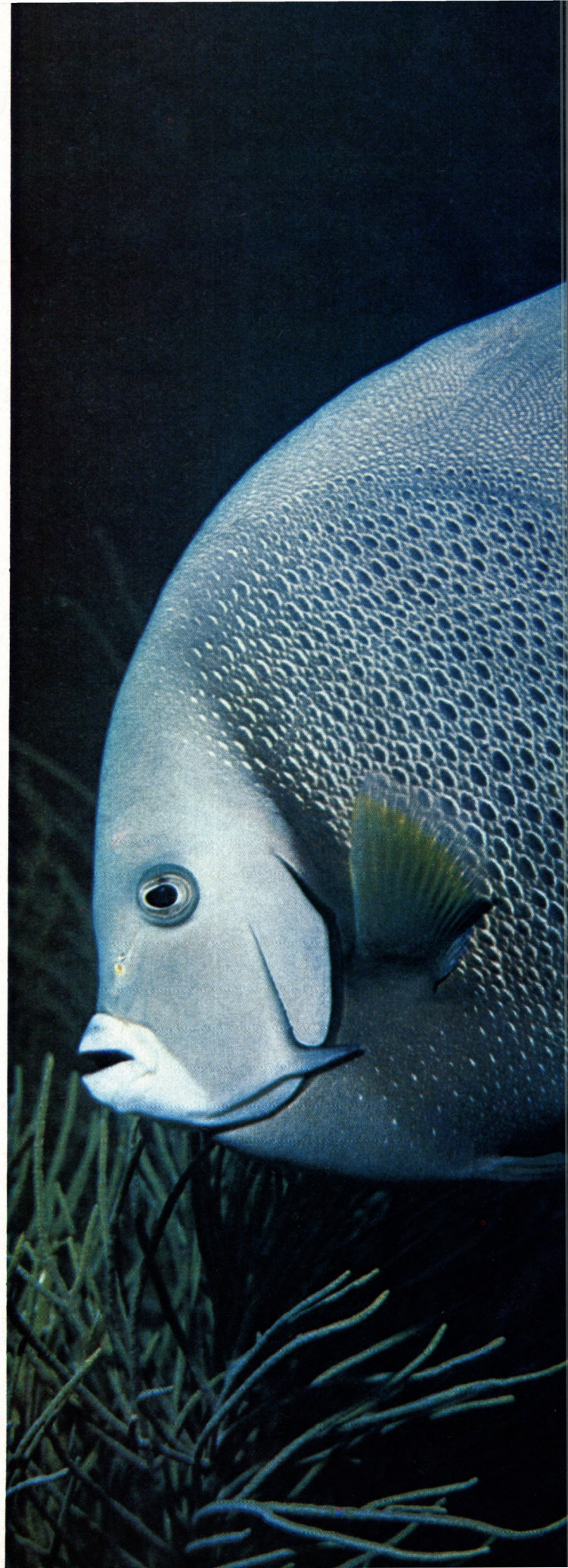
# FLORIDA'S MIDDLE KEYS

Story by Ned DeLoach  
Photography by  
Stephen Frink

Each year the lure of the Caribbean infects thousands of divers, drawing them southward with promises of unlimited visibility, warm water and abundant marine life. Most return home satisfied and well-rewarded. Some will be savoring the memories of a week spent in Jamaica, Cayman or the Bahamas, but for many, the Florida Keys remain the preferred site for that once-a-year, dream-dive vacation.

The Keys are a string of more than 200 islands extending the Florida Peninsula 180 miles southwest into the sea. From Jewfish Creek to Key West the chain is connected by the longest overseas highway in the world, a 108-mile strip linking 31 islands with 40 bridges. The islands separate the shallow flats of the Gulf of Mexico from the Florida Reef that lies at the edge of the Gulf Stream in the Atlantic. The reef, which parallels the entire length of the Keys, is the only living coral reef on the North American continent. Due to the easy access by auto and the beauty of this living reef, the Keys have become

Sport Diver

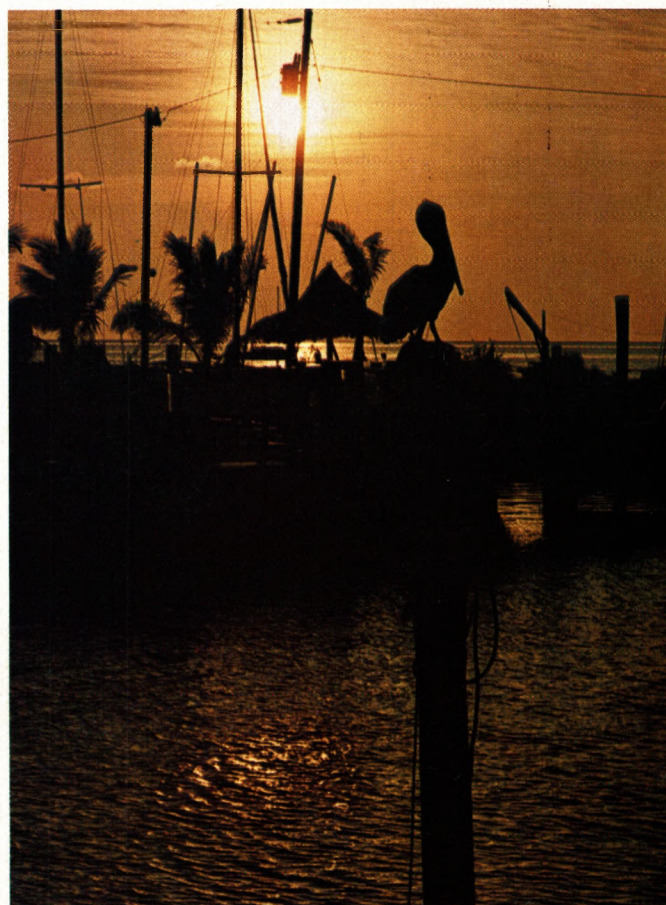






perhaps the most popular underwater recreational area in the world. Nearly everyone who joins the sport of diving has fantasies of exploring a living coral garden and most of these excited divers will head for the Keys. Few, if any, will leave disappointed.

Entering the Keys, the diver feels at home immediately. Red and white flags flap from every available pole along U.S. 1, and beneath them you'll find the largest concentration of diving businesses and charter services available anywhere. Experts committed to making the diver's vacation an enjoyable adventure will treat newcomers like divers, not tourists.



Richard H. Stewart



The location of Pennekamp Coral Reef State Park in the upper Keys has traditionally made it the first stop for divers, but the lure of the overseas highway and the longing to see new reef locations will draw them down U.S. 1, over longer expanses of blue water where the vistas seem progressively more beautiful. Here the sea dominates — the view, the dress of the people, the attitudes of the visitors. Many divers from landlocked locales are overwhelmed by their first view of the middle Keys. Here everything is part of the ocean — even the islands.

Marathon is the hub city of the Keys. Fifty-five miles west of Pennekamp Park, Marathon has long been known as a friendly and hospitable spot for the thousands of sport divers who visit each year. The city has every facility to make their stay enjoyable. Local restaurants are excellent and seafood, of course, is the specialty of the house. Accommodations are plentiful and prices range from low to luxury. Campers will find lots of room to pitch tents or park RVs at area campgrounds.

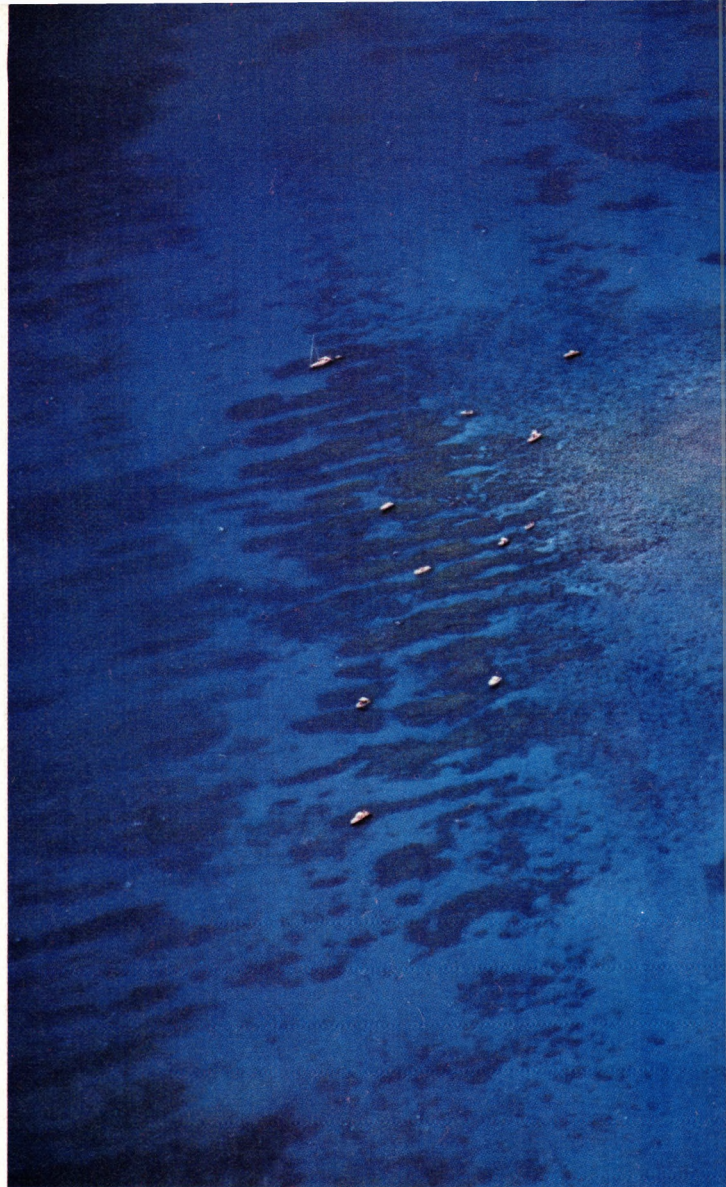
The section of the Florida reefline that skirts Vaca Key (on which Marathon is located) is acclaimed for its beauty and variety. Good underwater visibility is common during much of the year when the edge of the Gulf Stream sweeps inshore, bathing the reefs with clear water. Nearly 40 species of living corals form an extensive reef complex that supports a thriving community of tropicals and game fish. Divers have the choice of exploring several types of reef formations, varying from areas of scattered patch reef as shallow as 10 feet to deep drop-offs teeming with game fish.

Although most of the good sites are located only a short distance from land, a boat is necessary for all reef diving in the Keys. Marathon has several outstanding dive stores and charter services that offer half and full day diving trips. Their boats are generally fast, modern and designed for diving. The stores also offer equipment sales, rentals, repairs, air, diving instruction, information and helpful advice.

One of the most popular locations in the middle Keys is Coffins Patch, a large patch reef area located 3½ miles from Key Colony Beach, a suburb of Marathon.

Shallow 10 to 15 foot depths make this an excellent site for snorkeling or beginning scuba. Scattered groupings of brain and staghorn coral provide homes for an abundance of marine life. The large gray angelfish here are so accustomed to receiving handouts from the daily stream of divers they will dutifully tag along for an entire dive, waiting patiently for goodies. Coffins Patch is also the final resting place of several Spanish ships. The sand in the area supposedly still conceals a great wealth of silver coins and bars.

Located 8 miles southwest of Key Colony Beach is Sombrero Reef, marked by a 142-foot, steel-framed light tower. The instant you leave your boat, gliding down through the clear water, you realize the magnificence of Sombrero. Huge fingers of coral blanketed by a panoply of gorgonia run over the white







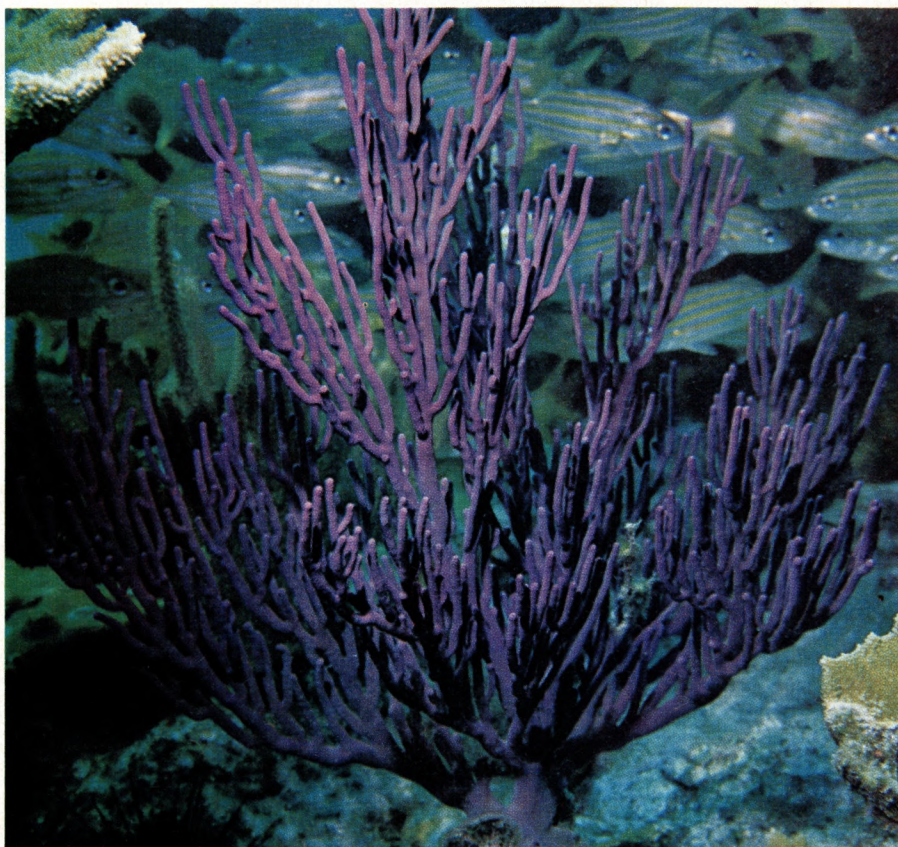
sand bottom towards the ocean. Sombrero can easily consume your whole day; and you can consume several tanks and still not explore all of the ravines, ledges and archways formed by the coral outcroppings. Schools of large barracuda eye the divers curiously, weaving in and out among the stands of brain and lettuce coral.

A shore distance east of Sombrero Light is Delta Shoal, which runs a half mile east and west, with depths ranging from 10 to 20 feet. Among the coral fingers lie the remains of several wrecks, including a slave-trade vessel that ran aground here in the 1850's. It is called the "Ivory Wreck" because of the elephant tusks that have been recovered from this site.

After exploring Marathon, most divers will continue west on U.S. 1, searching for new adventure.







Leaving Vaca Key you approach the famous Seven Mile Bridge, the longest inter-island connection on the overseas highway. Bahia Honda State Park is located near the end of the bridge, 11 miles from Marathon. Towering coconut palms line the most beautiful beaches in the Keys, and there are complete camping and picnicking facilities. The park marina has a boat ramp, dockage and boat rentals, but there is no dive store. Many campers use the diving facilities at Sunshine Key Aqua-Center, a short drive from the park entrance.

Most of the diving in this part of the Keys is concentrated on Looe Key, one of the most impressive reefs in the chain. The reef was named after the *HMS Looe*, a British naval vessel that ran aground on the sharp coral heads in 1744 while escorting a captured French ship to South Carolina.

The open, V-shaped shoal is completely submerged and the depth ranges from 2 to 40 feet. Shallow flats sprinkled with shells lie inshore, and coral fingers hundreds of feet long slope off southward towards deeper water. Cliff-like formations of hard corals harbor schools of colorful tropicals, while the larger overhangs and archways often conceal a large grouper or barracuda.

Looe Key has been nominated by the National Oceanographic and Atmospheric Administration (NOAA) to become the second U.S. Marine Sanctuary.

The only existing sanctuary surrounds the *U.S.S. Monitor*. If accepted, this beautiful reef will receive the same kind of protection — and the attendant Federal conservation funds — accorded our national parks. The nomination signifies that Washington has finally recognized what divers have known for years — the



Florida Reef is a fantastic, priceless part of our national heritage and deserves protection. Next year, some 250,000 divers will visit the Keys. Some will go no farther than Pennekamp Park, while others will drive through Marathon and on across the Seven Mile Bridge, hardly pausing to catch a rest. Both groups will miss what has to be one of the ultimate thrills of the Keys: skimming over Sombrero Reef of Looe Key late of an afternoon with a cool breeze drying your hair; a full day of reef-seeing, picture-taking and bug-hunting behind you, making the run back to Marathon for a sit-down dinner of lobster and drawn butter. If you lick your lips you can almost taste the succulent shellfish — the taste of the Middle Keys.



Key Colony Divers  
MM 53.56  
Key Colony Beach, FL 33051

The Diving Site  
12565 Overseas Hwy.  
Marathon, FL 33052

Coral Lagoon Dive Shop  
12399 Overseas Hwy.  
Marathon, FL 33050

Divers Headquarters  
11511 Overseas Hwy.  
Marathon Shores, FL 33052

Hall's Dive Center & College  
1688 Overseas Hwy.  
Marathon, FL 33050

Sunshine Key Aqua Center  
Holiday Inn Trav-L Park  
RR1, Box 790-L  
Sunshine Key, FL 33043

Underseas, Inc.  
U.S. Hwy. 1, P.O. Box 319  
Big Pine Key, FL 33043

Greater Marathon  
Chamber of Commerce  
Dept. SPDM  
3333 Overseas Hwy.  
Marathon, FL 33050

Tarpon Lodge  
4590 Overseas Hwy.  
Marathon, FL 33050

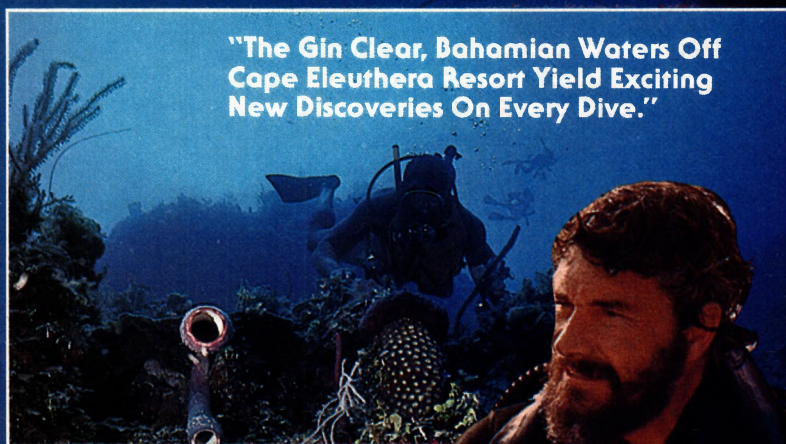
*Sincere thanks to Bob & Linda  
Brayman (Hall's Dive Center) for all  
their help.*

#### **DIT Acquires Divers Academy**

John Manlove, president of the Divers Institute of Technology, Seattle, Washington, has announced the acquisition of the Divers Academy of the Eastern Seaboard located in Camden, New Jersey. Effective immediately, the DIT training program will be the curriculum for all instruction at Divers Academy.

According to Manlove, the reason for the move was "...to make our training available to east coast students without the hardship of a 3,000 mile move to Seattle."

Expansion of oil-drilling activities on the east coast is expected to create thousands of jobs over the next decade for diving and dive-related professionals.



**"The Gin Clear, Bahamian Waters Off  
Cape Eleuthera Resort Yield Exciting  
New Discoveries On Every Dive."**

*— Bob Wallace, internationally  
known underwater explorer,  
photographer and lecturer*

Bob Wallace is typical of the serious divers who keep coming back to Cape Eleuthera. Here, in his own words, is why, after nearly 100 undersea adventures on our reefs, he still considers them to be an exciting challenge.

"On my wide ranging photographic assignments, I have logged hundreds of hours at diving resorts throughout the world. Frankly, none can compare with Cape Eleuthera for the quality of topside facilities and services and the amazing variety of marine life and diving and underwater photographic opportunities directly offshore.

"Whether you're snorkeling in a cove where the conchs are as thick as cobblestones, or gliding through a staghorn jungle in 30' of incredibly clear water, or hovering over the rim of the awesome Eleuthera wall, Cape Eleuthera will be a place that lures you back again and again. For divers especially, one of their ads says it best. 'You'll know how much you loved Cape Eleuthera when it breaks your heart to leave.'"

For reservations and information about our dive packages call Cape Eleuthera toll-free at:

**1-800-432-8251** inside Florida.  
**1-800-327-8776** outside Florida.  
**1-813-542-3191** after 5 PM  
and weekends.

Or send this coupon to: ➔



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# CBS SPORTS SPECTACULAR

On the fifth morning we got another early start before the sun broke above the ocean. The long days under a blazing sun were beginning to catch up to the crew so a short nap this morning seemed appropriate. As our boat left the dock, the passengers settled in for a smooth and speechless ride.

Approaching Great Tobago Island we could see the main operations

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## STORY AND PHOTOS BY R. H. STEWART

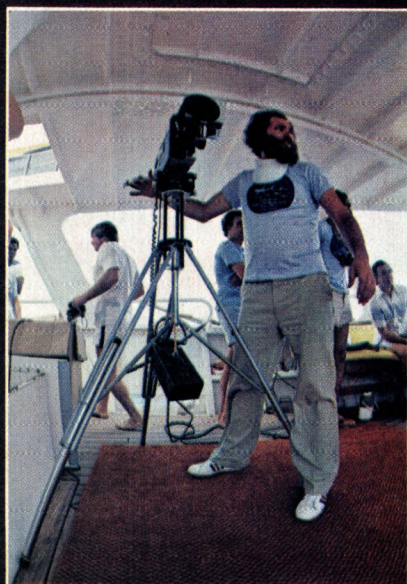
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and support boats already geared up for the new day. We were returning in hopes that today would be the big day.

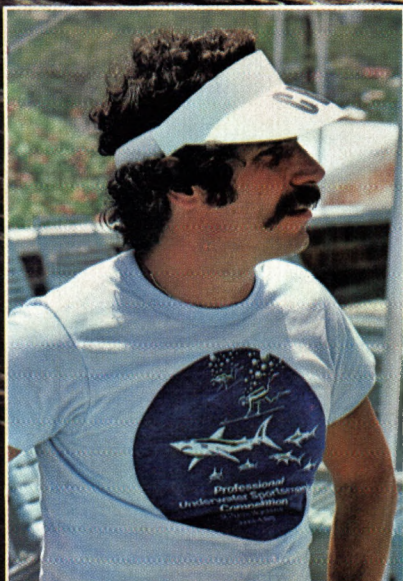
A week ago, the entire camera and technical crews of Stuart Goodman Productions had accomplished a task that almost requires an act of God to succeed. A complete video produc-

tion crew had been transported to St. Thomas, U.S. Virgin Islands from New York with several thousand pounds of electronic equipment.

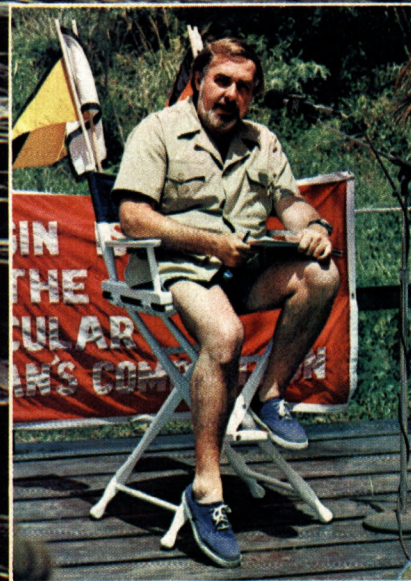
Their job was to record the entire "First International Shark Tagging Competition". This was the first time such a lengthy program would be shot on location underwater, entirely on video tape.







Stuart Goodman, Producer (left) keeps a watchful eye as the crews and filming teams manipulate their tools to video record (far left). Although the setting was relaxed and scenic, the competitor's ultimate efforts under the water were in the judging hands of *Skin Diver Magazine* Publisher, Paul Tzimoulis (right).





Needless to say there were a few minor complications during those first few days, but they had been anticipated and were dealt with in an orderly fashion.

Since the day the film crews set up, the support teams had been continuously chumming the water. Around 11 a.m. that morning, someone yelled, "Shark!", and all eyes were riveted to the bait line as the shark began to break surface in an attempt to wrench free the bait.

This shark was a loner, and the rules of the game said a group of sharks was needed for competition. Within a short time all was quiet and the crews went back to shooting the short surface cutaways that would later be incorporated into the show. For several days the only things stirring were the film crews and technicians. What had been planned as a week of active shooting was fast becoming a major wash-out. There were no

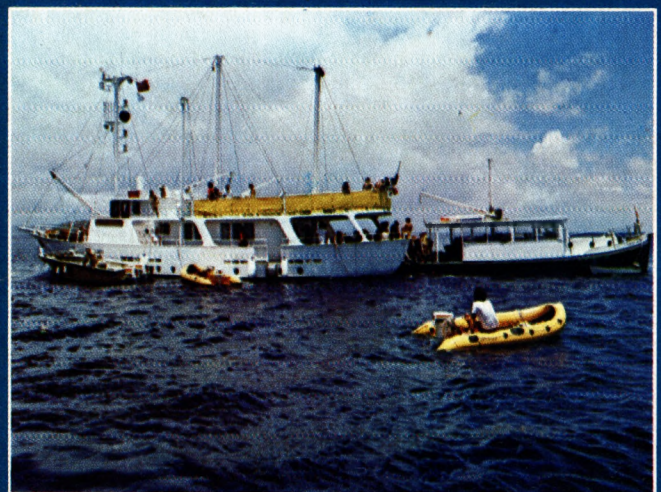
sharks to be found.

In an attempt to salvage some time, two of the three film crews were sent to various locations around St. Thomas to record interviews with the competitors. Ron and Valerie Taylor of Australia made up the first team. Both are well known internationally for their shark experience. Howard Hall from California and Gordy Waterman of Long Island were the second team; and from the Virgin Islands were Charles "Dusty" Pearsall and Dana Fagan; all have reputations as expert spearfishermen and excellent swimmers.

The days rolled by, but still no sign of any sharks since that first day. Finally a local fishing expert was called with the hope that he could assist in locating some sharks. By now the general feeling was that the original location was hopeless, so everything came up and we were off to a new location. Not more than a few miles

from the first area the boats dropped anchor and the equipment was repositioned. Two more days passed without a sign of any sharks. The entire program was looking a bit shaky; an undertaking like this costs thousands of dollars for every day spent on location.

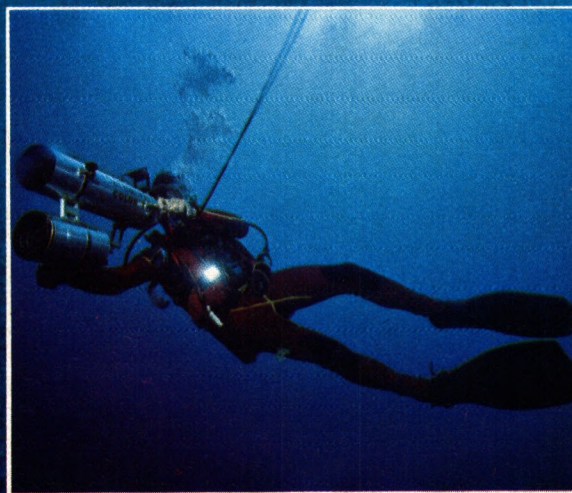
Late in the afternoon of the seventh day, when all hopes of locating a group of sharks was fading, a shout went up from the crew — Sharks! No sooner was the announcement made than the underwater cameramen, the first set of competitors and the judge, Paul Tzimoulis, slipped into the water to begin the tagging. Four or five sharks cautiously circled the bait as the competitors maneuvered to place their tags. The first team, Ron and Valerie, managed to tag two sharks in the dorsal fin with the bright fisheries information tags during their ten minutes in the water. With their time up, they quickly exited while





the second team, Howard and Gordy, swam off into the blue themselves, only tagging one shark. From the last team, Dana tagged one shark in the body after almost eight minutes of intense swimming. After only one hour and twenty minutes of excitement the waters were once again quiet. To all of those who had put forth such an effort during the last week, that two-hour span of action made the production a success, and well worth the long, drawn-out days.

After the video tapes were reviewed to verify the accuracy of the tagging, the winners were announced. Ron and Valerie Taylor had lodged the most tags and were proclaimed the winners, and thanks to the production crews of Stuart Goodman and the CBS network, a happening that would not otherwise have been possible will be viewed by millions of Americans on the CBS Sports Spectacular on September 16.



Competitors Ron and Valerie Taylor sit attentively during the rule and regulation session held at the St. Thomas Diving Club (far left). The crews, competitors, support teams and media sprawled among the three main production boats



# BENEATH THE SEA

# LONGURE FROGFISH

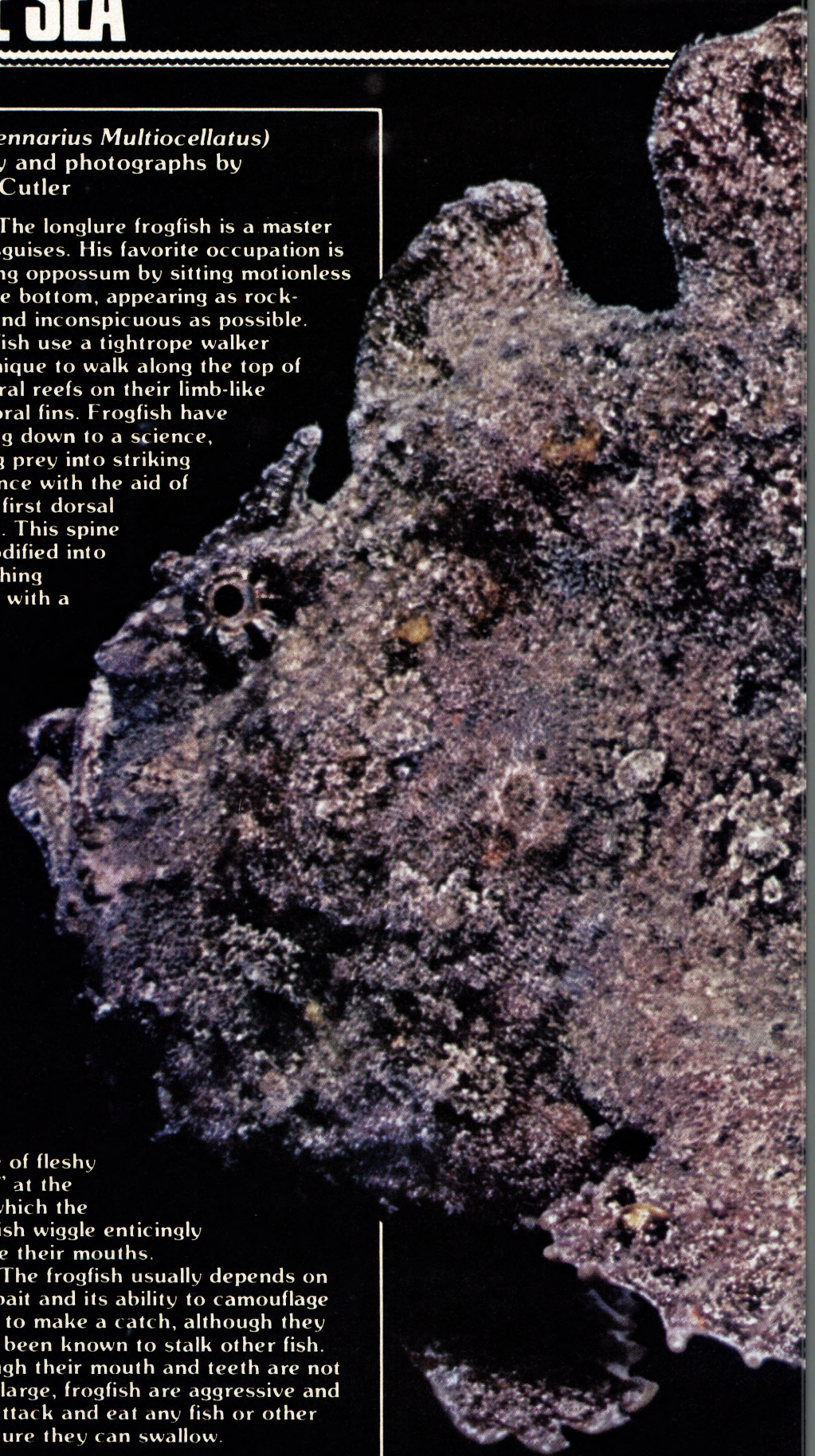
*(Antennarius Multiocellatus)*

Story and photographs by  
Ron Cutler

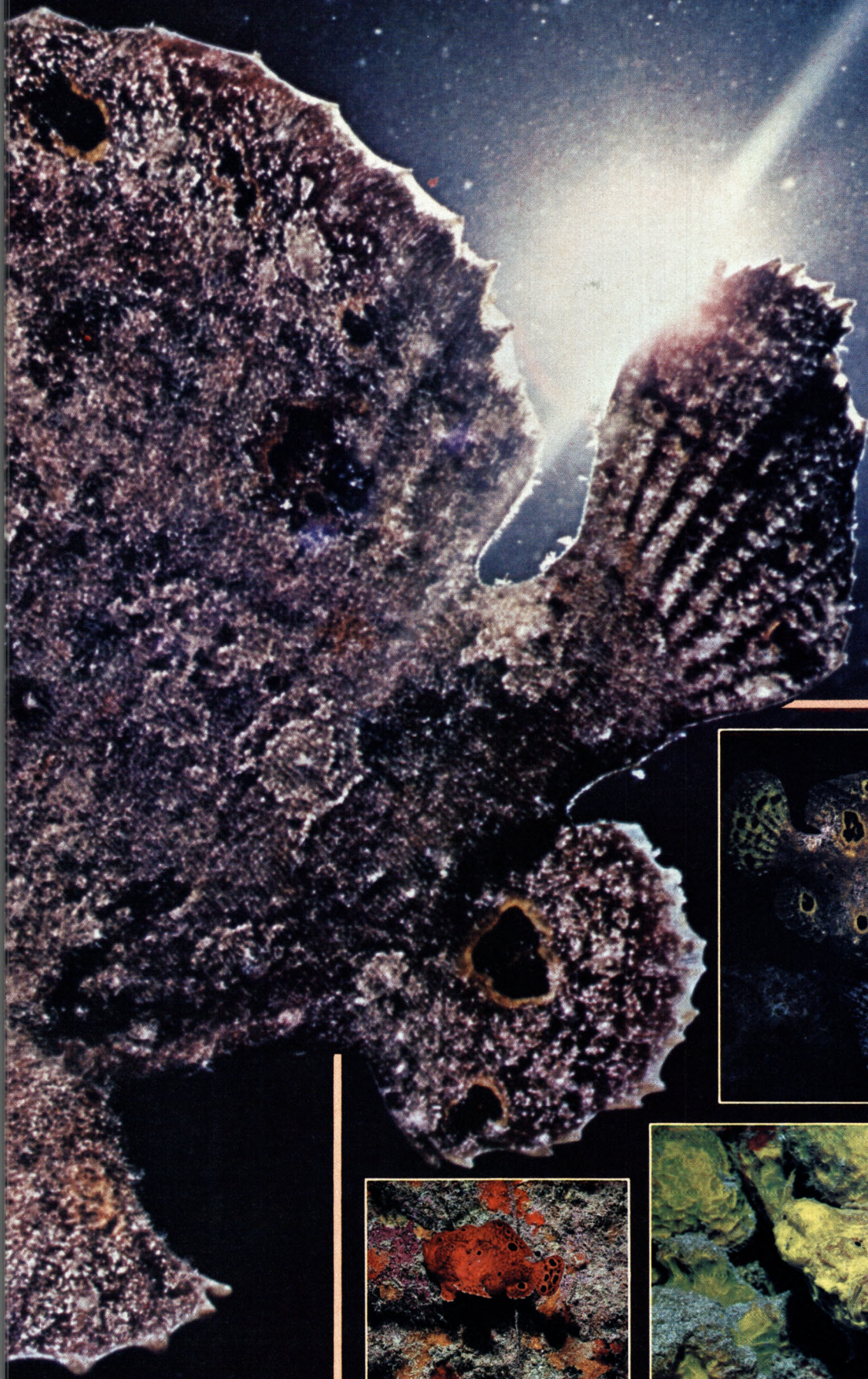
The longure frogfish is a master of disguises. His favorite occupation is playing opossum by sitting motionless on the bottom, appearing as rock-like and inconspicuous as possible. Frogfish use a tightrope walker technique to walk along the top of coral reefs on their limb-like pectoral fins. Frogfish have fishing down to a science, luring prey into striking distance with the aid of their first dorsal spine. This spine is modified into a "fishing pole" with a

piece of fleshy "bait" at the tip, which the frogfish wiggle enticingly above their mouths.

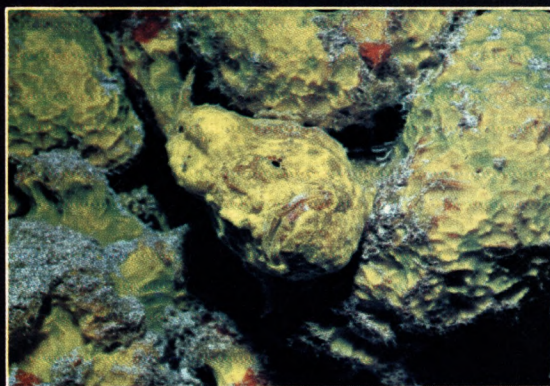
The frogfish usually depends on this bait and its ability to camouflage itself to make a catch, although they have been known to stalk other fish. Though their mouth and teeth are not very large, frogfish are aggressive and will attack and eat any fish or other creature they can swallow.







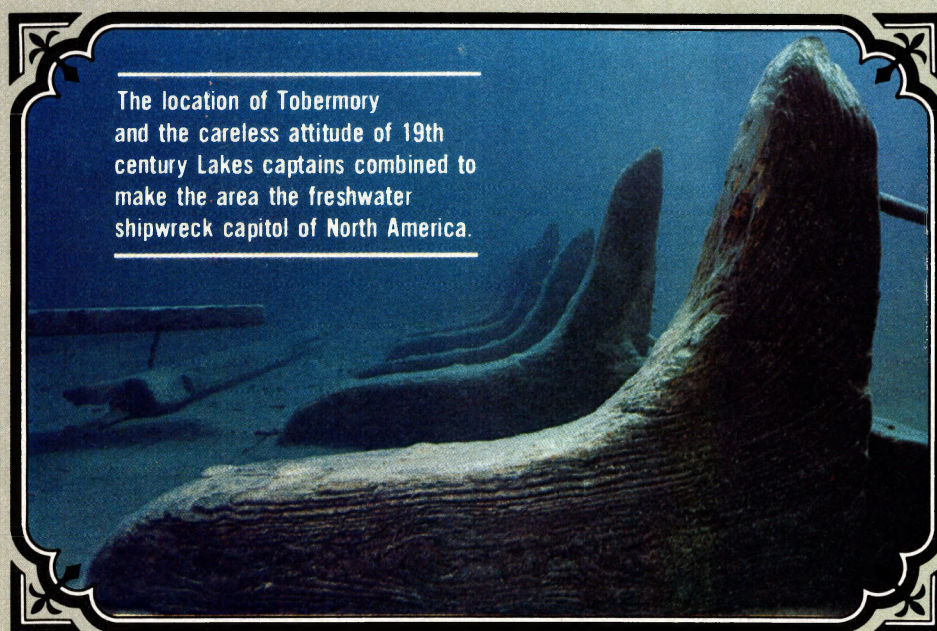
The longlure frogfish lives in all tropical and subtropical seas. Divers normally spot a frogfish only when it is moving against a contrasting background such as a white sand bottom, or when the sponge they are admiring suddenly gets up and starts to walk away.





# THE TOBERMORY TRIANGLE

Story and Photography by Russ Bellico



The location of Tobermory and the careless attitude of 19th century Lakes captains combined to make the area the freshwater shipwreck capitol of North America.

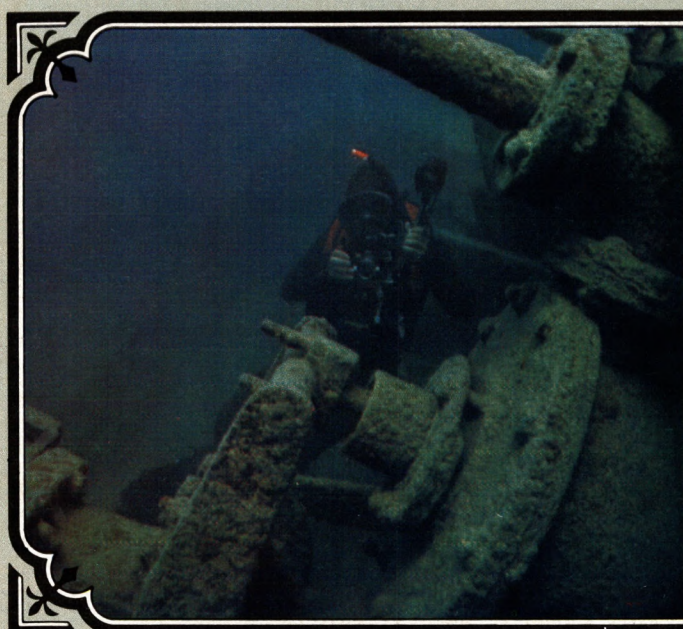
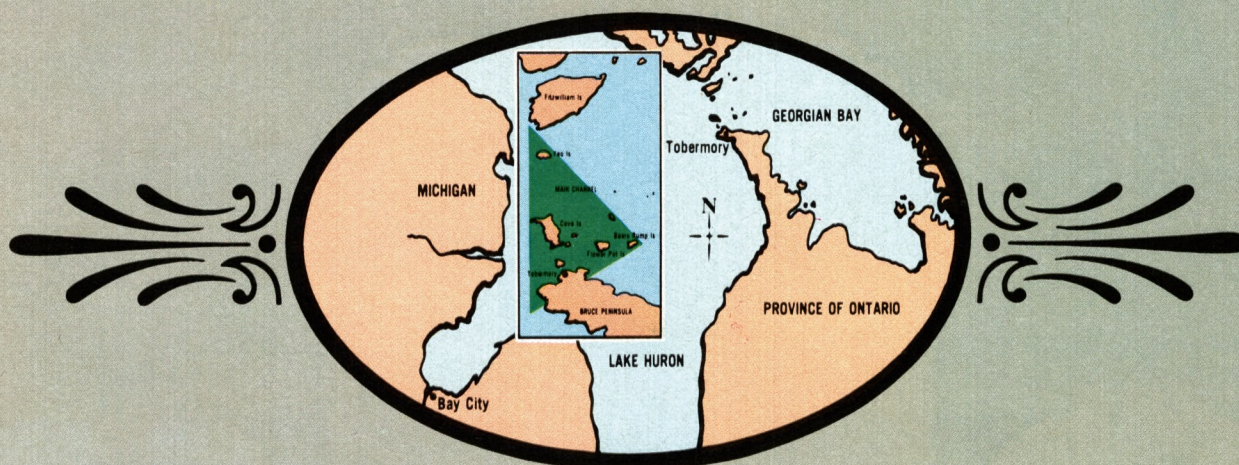
In the late 19th century the Great Lakes were a congested highway with thousands of ships passing from one region to another. In 1892 there were 1,700 steamboats and 1,500 sailing vessels plying the turbid and sometimes dangerous waters of the great inland oceans. Westbound vessels had to pass through the narrow channel at Tobermory as they transported lumber from Georgian Bay ports. In either direction time and expenses could be minimized by running as close to the tip of Bruce Peninsula as possible. Consequently, the captains had to navigate around islands, limestone shoals and reefs which beset the tricky and dangerous routes through Tobermory.

The merchant sailing and steamboat era on Lake Huron was nonchanlant and even careless. Speed was so important and shipping traffic so heavy that it wasn't

unusual for steamboats and schooners to collide, side-swipe, or ram one another. Instrumentation was almost non-existent as sailors relied on forecasts like "evening red and morning gray will set the sailor on his way" or "rainbow at night, sailors delight." The pessimistic sayings were ignored since the captains were intent on getting somewhere, weather or not. Many of the freshwater captains didn't even bother with the extra refinements of a compass, but instead used their watch for navigation by pointing the hour hand at the sun and then estimating south to lie midway between the hour hand and 12 on the dial.

The first complete and accurate survey of the Tobermory area was not even begun until 1884. These government charts were not well received by the Great Lakes captains; after all, how accurate could the maps be





when they were made up by a lot of desk pilots who probably had never even sailed these waters? Veteran skippers used more reliable navigation aids such as the smell of cherry blossoms in the wind or the time it took their whistle to echo back from nearby cliffs. Needless to say, many of these skippers ended up paddling away from their wrecked ships in a lifeboat, without the benefit of an echoing whistle.

Today Tobermory is a unique part of North America. Its coastline is varied, with craggy limestone cliffs, smooth sandy beaches and inlets, and is famous for its lush evergreen vegetation. The tip of Bruce Peninsula is divided into two perfect, natural harbors called Big Tub and Little Tub. Big Tub has two long government docks with a lodge, cottage, campsite and private homes. Little Tub is the center of the village with the ferry landing,

docks, shower facilities for boaters, gift shops, restaurants, motels and two excellent full service dive stores.

The Tobermory area has nearly 75 shipwrecks, many of which have never been found. The dive stores, however, have 47 of the wrecks listed for divers. The water over most of the wrecks is so clear, it could almost be mistaken for the Caribbean rather than part of the Great Lakes. Forty-five square miles around Tobermory and the Cape Hurd Islands have been designated the Fathom Five Provincial Park. The park encompasses 26 of the wrecks and the government strictly enforces the law prohibiting relic hunting with arrests and fines.

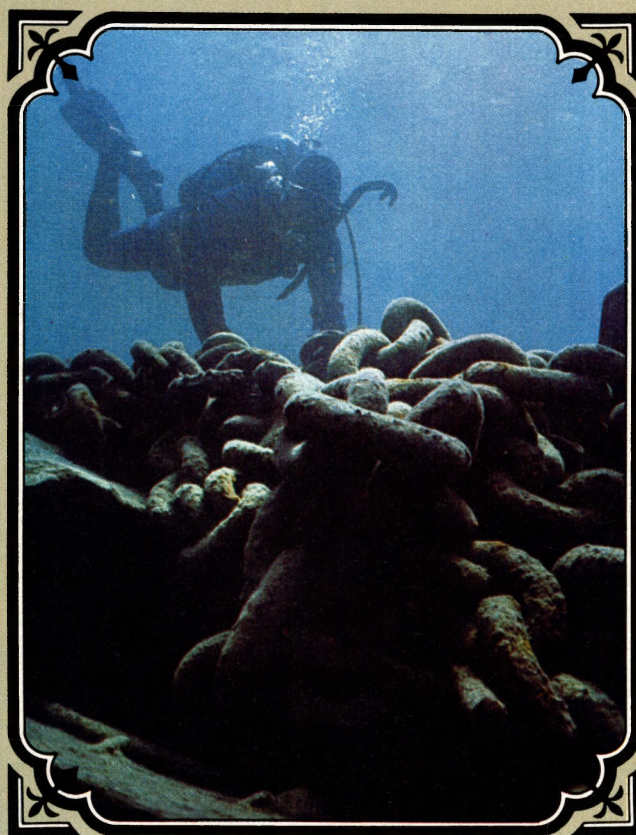
The only drawback to Tobermory is the rather limited entertainment at night. Apparently there is some kind of law which allows only one bar until the permanent



The cold, fresh water and absence of teredo worms contribute to the longevity and incredible preservation of shipwrecks at Tobermory. Shown below is the ship's pump and bow section of the ARABIA, perhaps the area's most famous wreck.



Tony Marshall



At left is the anchor chain of the W. L. WETMORE, which lies piled on deck. The starboard anchor of the ARABIA (below) is only one of many pieces of ship's apparel which are still aboard the barque.



Tony Marshall

population of the town increases. So the only "liquid refreshments" are at the Lodge on Little Tub. There are also laws that prohibit drinking on boats or moving your drink from table to table at a bar. Nevertheless, the one bar in town does offer some "friendly cheer" and a meeting place for visitors each night.

The diving at Tobermory starts right at your doorstep in both harbors. Lying at the end of Big Tub are two wrecks. One of the best intact schooners in the Great Lakes is the 120-foot Sweepstakes, that was abandoned in the harbor in 1896. Her hull is completely intact and the bow railing, huge windlass and stern rudder post make good photographic backgrounds, while the large open hatches on her deck allow entry to the entire interior of the ship. Unfortunately, ice and illegal souvenir hunting have slightly damaged the ship in recent years. Only a short swim from the Sweepstakes is the wreckage of the steamer City of Grand Rapids that burned and sank in 1907. The 122-foot wreck rests in only 12 feet of water, but her machinery, marine hardware, and intact stern section are worth seeing. The rudder and propeller have been salvaged and are on display at the St. Edmonds Township Museum, a few miles south of the village. Snorkelers and divers should be aware of the glass-bottom boat from Little Tub that visits these two wrecks

several times a day. An early morning dive is the best bet for clear water and avoiding boat traffic.

At the entrance of the Little Tub Harbor lie the wrecks of several old steamtugs; the Robert K, John and Alex, Alice G, and Annie Hall. The ships sank between 1882 and 1947 and are worth a dive, especially when the weather is too rough to go out into the lake. The best ship here is the Robert K, which lies in 20 feet of water right off a large cement dock. The wreck is largely intact with its boilers in place and a railing on the stern that looks just like the poop of a privateer.

Russel Island, the closest island to Tobermory, has five known wrecks and several as yet undiscovered. The 214-foot steamer W L Wetmore sank west of the island during a winter storm in 1901 while towing two schooners. The Wetmore offers some of the best photographic possibilities in the area since she lies only 20 feet deep on a limestone reef, and water visibility is generally excellent. As you approach the wreck from the charter boat, you can see the entire hull looming below in the crystal clear water. The Wetmore has massive boilers which nearly reach to the surface, a huge rudder and propeller, anchor chain, and an endless view of perfect ribs along her deck. Two years after the Wetmore

*continued on page 40*



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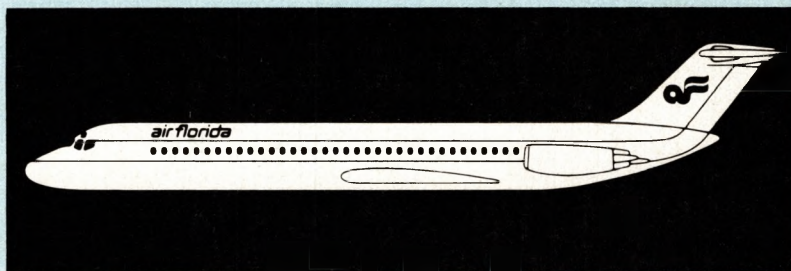
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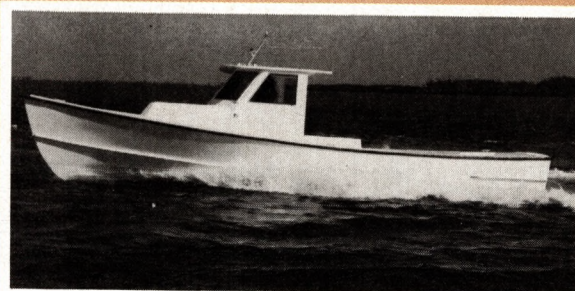
# New for '78



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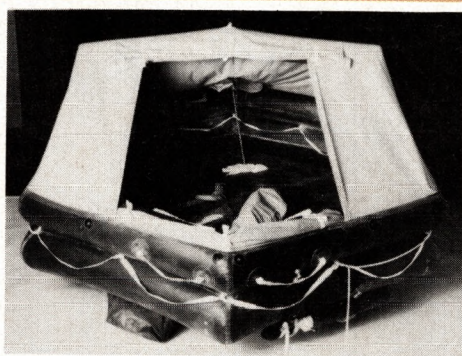
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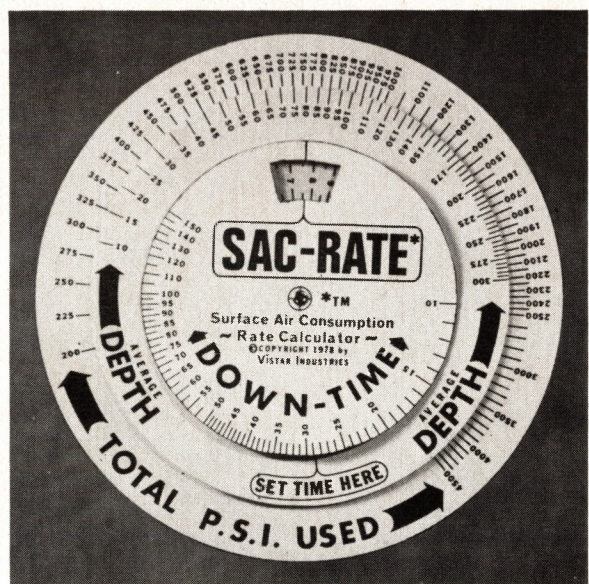


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1. The Sunpack 28 strobe couples with Nikonos I/II or Nikonos III connectors, is neutrally buoyant and has leak-alert signal. Operates to 326 feet. Berkey Marketing, Box 1102, Woodside, NY 11577

2. New from SeaQuest is the White Water B/C, which features a new "Diamond" harness, an expandable pocket, a key ring loop, mesh drain panels, and 40 lbs. of lift. It is available with or without CO2 and/or low-pressure inflator. Choice of three colors. SeaQuest, 722 Genevieve Street, Solana Beach, Calif. 92075

3. With a Sac-Rate (Surface Air Consumption Rate) calculator from Vistar, Inc., not only can you improve your aerobic efficiency, the number of breaths per minute, but you can predict the length of your "down-time" as well. \$4.95 plus 25¢ postage. Vistar, Inc., Box 14963, Austin, TX 78761

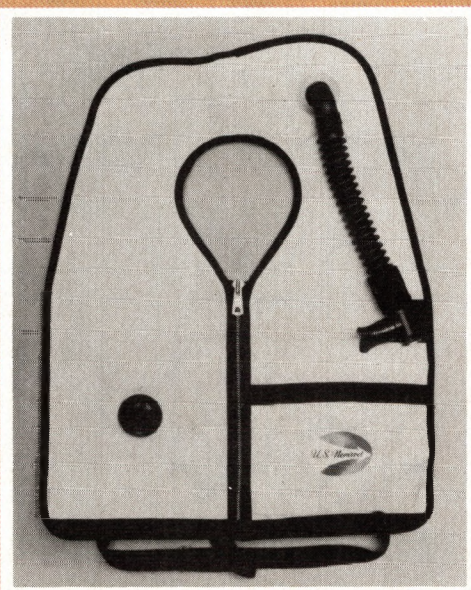


4. Hamburgers aren't the only thing you can have your way. the Stuart Angler "Hardtop" model features New England lobster boat styling. Constructed of fiberglass, the "Hardtop" has a cuddy cabin with large vee berths, head, sink and storage area. Stuart Angler Corp., 3079 Commercial Center, Stuart, FL 33494

5. A large capacity payload of 2400 lbs., and a maximum 65 h.p. rating, make the Mark III Grand Raid, from Zodiac, highly versatile. Zodiac of North America, Inc., 11 Lee St., Annapolis, MD 21401

6. "Divers & Cameras", a new book on underwater photography, written by Joe Strykowski, contains not only detailed information on composition, but information on the technical side of underwater photography as well. Over 200 pages with nearly 150 illustrations. \$6.95 from DACOR Corp., 161 Northfield Road, Northfield, IL 60093

7. Just 'cause your valet quit means you don't gotta look like no bum. With Wrinkles Away you can steam away that "slept-in" look in your clothes and be your old suave self again. Simply fill with tap water, plug it in, and no one is the wiser. Small and easily concealed. \$14.95. Wrinkles Away, Inc., 300 71st St., Suite 615, Miami Beach, FL 33141



10

8. How many times have you needed something like this and not had it? The Porpoise inflatable life raft comes packed for immediate use and inflates in just 30 seconds. Approved by RORC, IORC, and DOTI. From Beaufort Air-Sea Ltd., Beaufort, Rd., Birkenhead, Merseyside, L41 1HQ England.

9. Got a friend who loves to tell unbelievable stories? Slip these on and he'll know you can wade through anything. Aqua-Chaps also offer protection against underwater abrasion. Neoprene impregnated nylon construction. Subsalve Industries, Inc., P.O. Box 9287, Providence, RI 02940

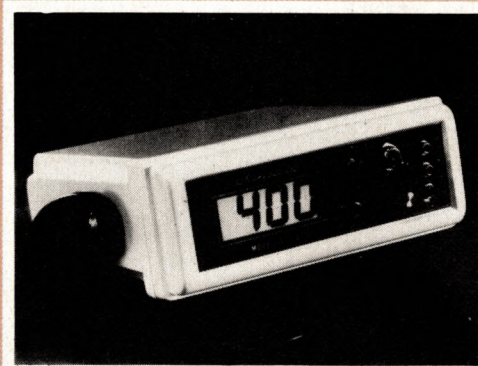
10. Made of nylon fabric, the BC 24, from U.S. Nemrod, features a 10" hose, an oral inflator with push-button mouthpiece, and waist and spine straps. 18 lbs. buoyancy. U.S. Nemrod, P.O. Box 5188, 2315 Whitney Ave., Hamden, CT 06518



11. Extreme low-power demand and all-weather use, are just two of the characteristics of this digital-display depth indicator, make by Shakespeare Marine Electronics. The unit also features two alarm systems which sound when the desired depth is reached, and, when the depth rises or falls beyond a given range. Shakespeare Marine Electronics. Shakespeare Products Division, 241 Kalamazoo Ave., Kalamazoo, MI 49007

12. A float . . . well, floats. Could they be improved? Pelican Products announces the use of a new, hybrid-foamed polymer plastic resulting in greater strength and buoyancy for its line of floats, the Pelican Float. Also new in the line is the use of sun-resistant, fluorescent colors which allow more visibility and longer life. Pelican Products, 23763 Madison St., Torrance, CA 90505

13. The Mark I De Lux, from Zodiac, features enough room for you, your buddy, and your gear. Folded, it is light, easily carried and stowed. Zodiac of North America, Inc., 11 Lee St., Annapolis, MD 21401

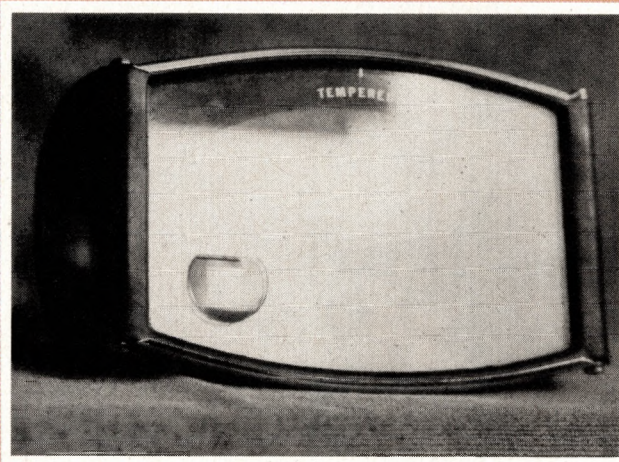


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14. The Faceplate Magnifying Glass. Easily installed on most faceplates, the magnifying glass focuses at about 16" in water, making small shells and other marine artifacts easily visible. \$15.95 from Libra Optics, P.O. Box 871, Redondo Beach, CA 90277

15. Hauls €!(%.)\*! Evolving from a successful racing design, the Maverick, blends the features of a high-performance hull with those of a normally sedate-looking fishing boat. Add its maximum rated 155 h.p. outboard motor, and it'll go fast enough to get you into any jail. Berg Boats, Inc. 2201 S. 10 St., Ft. Pierce, Fla. 33450

16. 100 lbs., or 20,000 lbs. — it doesn't matter — Subsalve has a heavy-duty lift bag to fill your requirements. Constructed of neoprene impregnated nylon for long life, every Subsalve bag comes equipped with a lanyard controlled plunger dump valve, and lift straps. Subsalve Industries Inc., P.O. Box 9287, Providence, R.I. 02940



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17. Super Lux, from U.S. Nemrod, features a double-edged seal for stability, comfort, and fit. U.S. Nemrod, P.O. Box 5188, 2315 Whitney Ave., Hamden, CT 06518

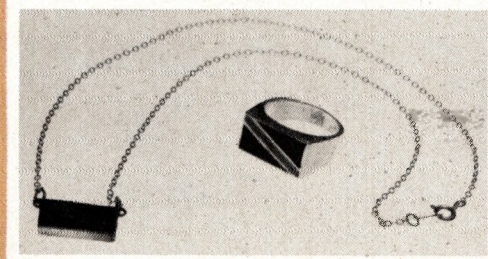
18. The "Divers Down" ring and pendant are handcrafted from sterling silver, inlaid with Italian red coral and lustrous mother of pearl. Designed and distributed by Sunshine Designs, P.O. Box 2616, Key West, FL 33040

19. Offering features normally not found on boats of its size, the Aquasport model 176, new from Aquasport, Inc., measures just 17 feet-6 inches in length. The 176 has a fiberglass multiple girder stringer system as well as a lockable cabin which contains two bunks and enough space for a hideaway, portable toilet. Aquasport, Inc., 7925 West 2nd Ct., Hialeah, FL 33014

20. Designed with tropical diving in mind is the Sea Skin. Salt and chlorine treated, and made of stretch nylon, in an action weight, it provides light thermal protection and abrasion protection in a stylish package. \$34.95. Choice of red or blue. Sizes: S, M, L, XL. R. N. Tice Co., 670 N.W. 19th St., Suite 110, Ft. Lauderdale, Fla. 33311



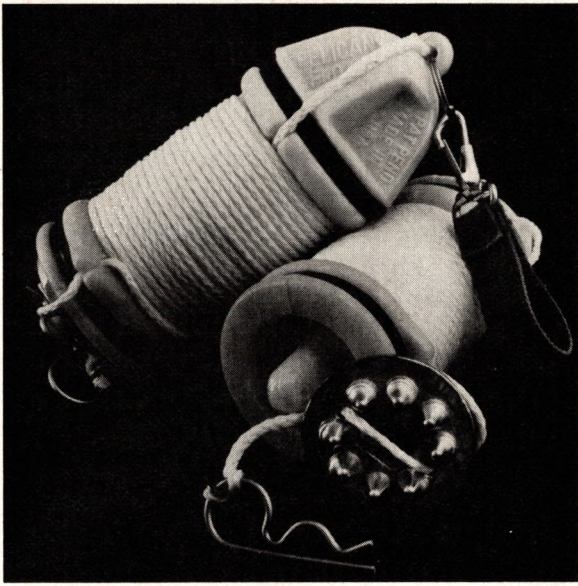
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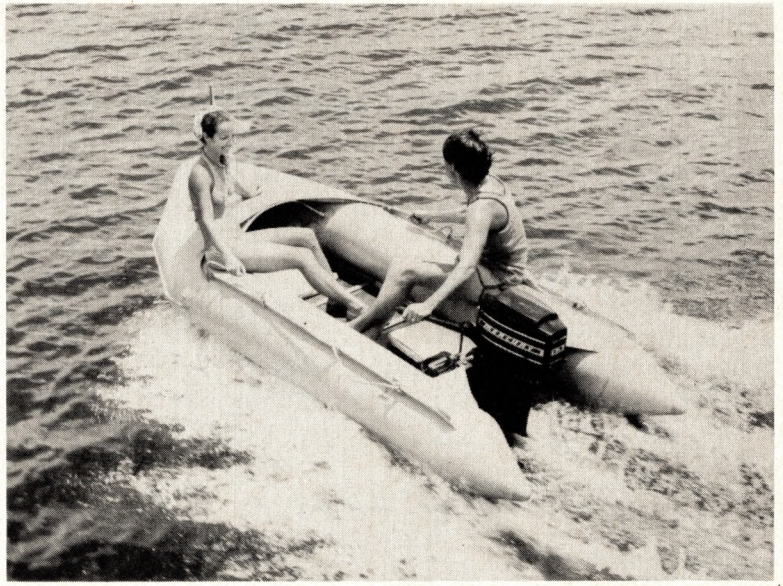
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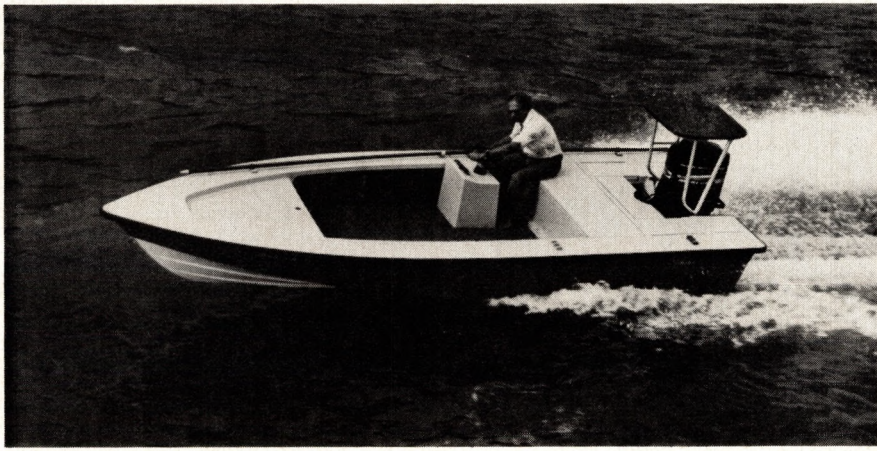
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(Please Print)

## THE TOBERMORY TRIANGLE

continued from page 34

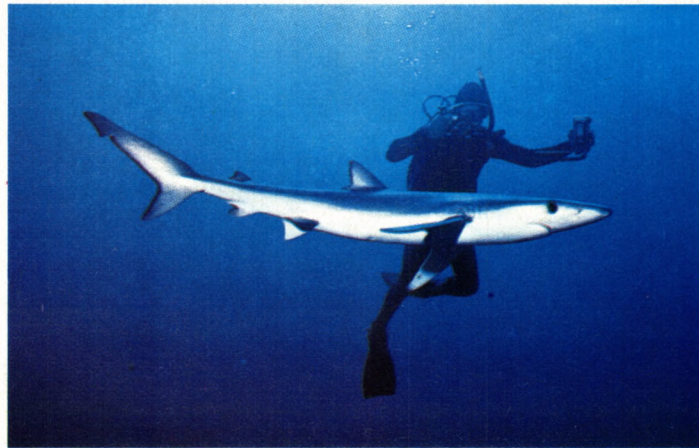
disaster, a similar steamer, *the Newaygo*, sank in 30 feet of water northwest of Russel Island. She looks a great deal like the *Wetmore*, but visibility is slightly less since she lies in open water. A more challenging dive off Russel Island is the 139-foot schooner *Philo Scoville*. The schooner went down during a northeaster after running aground on the north shore of the island in 1889. The captain was crushed to death between the rocky shore and the bow of the lurching ship, but four other crew members escaped. Today, the wreckage rests between 45 and 90 feet deep off the island. The ship is fairly broken up, but its remains somehow look awesome in the dark, cold water. As I descended through the broken beams of the ship, the water temperature dropped until it reached about 44°F — and this was in August. It seemed as if every five feet, I had to let more air into my BC vest or somehow sink forever into the smashed timbers of the *Scoville*. The nearly intact bow of the schooner, with its broken bowsprit at 80 feet, seemed to be hanging off the edge of the earth. Actually, the bow section is perched on a steep underwater incline from the island which adds to this perspective. It was an eerie sight that brought a strange mixture of excitement and apprehension.

To the northeast of Russel Island lie several notable wrecks, two of which, the *Arabia* and *Forest City*, are among the most demanding dives in the Tobermory area. Both of the wrecks rest in deep water and it requires some negotiation to get charter boats out there during the week. The people who sign up for the trip usually decide on what wrecks they want to visit; therefore you would have to get your own group together or convince other visiting divers to go out there. However, this is not a dive for novices under any circumstances. The 131-foot schooner *Arabia* foundered off Echo Island and was abandoned during a gale in 1884. She is in 100 feet of water and in good condition since the ship was not smashed on a rocky shore, but instead sank in the open lake. The bow is fully intact, the masts lie at its sides, the windlass and anchors remain on the wreck, and the wheel and cockpit lie to one side. The steamer *Forest City* slammed into Bear's Rump Island during a dense fog in 1904. The 216-foot steamer slid off the rocks into deeper water two weeks later where she remains fairly intact

continued page 46



# To Eat A SHARK



Karen Straus

by Paul J. Hill

Seafood fanciers agree that flounder is fine, sole is superb, and lobster is luscious. But only a gourmet is aware that shark meat is scrumptious. Most of us are more concerned about being eaten by a shark than we are about eating a shark. Americans are finicky fish eaters with conservative tastes and seldom sample "odd" species.

Since the United States imposed a 200-mile fishing limit, Americans have inherited millions of tons of obscure but edible fish including sharks — which seldom end up on the dinner table. The U.S. potential of unutilized fishes (including the spiny dogfish shark) is estimated to be at least seven billion pounds annually. We under-utilize edible shark species because we turn up our noses at them as food. And we allow foreign nations to harvest them as surplus under our 200-mile law.

At the same time, we catch and consume too many fish which we consider palatable, such as halibut, cod, haddock, salmon, and yellow-tail flounder — and some of these have become endangered species.

The spiny dogfish shark, sometimes called grayfish, could become a

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***Shark meat was unknowingly consumed by the public during the war years 1942 to 1945 . . . under common trade names such as whitefish, grayfish or filet.***

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marketable product in the United States. At present, the abundant dogfish shark is a nuisance to commercial fishermen on both coasts of the United States and Canada. It is not unusual for a fishing vessel to catch 10,000 pounds of them in one tow, usually with damage to the net. They are then discarded at sea.

The spiny dogfish shark is a food fish in Europe, and much of the Norwegian catch is shipped to England where it often appears in the traditional "fish-and-chips". Britons also find it on the fishmonger's counter as "flake" and "rock salmon". To increase the use of dogfish, about 10 years ago, Great Britain introduced it in the form of frying sausage, frankfurters, and "fish crisps".

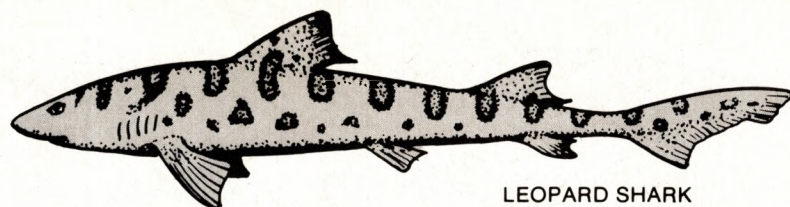
Fresh dogfish shark is delicious. I can add my testimony to that of the millions who eat it frequently in Europe and the rest of the world. The fillets are bone-free and white, with a flaky texture and firmness similar to halibut and haddock. The flavor is mild and when the fillet is fried, it produces no odors other than those expected with any fresh fish. Also, it can be substituted in most fish recipes.

A taste-test panel of Americans tried spiny dogfish shark fillets, steamed and smoked, and gave both styles a high rating. In another test, the panel preferred fishsticks made from dogfish shark to fishsticks bought in a local supermarket.

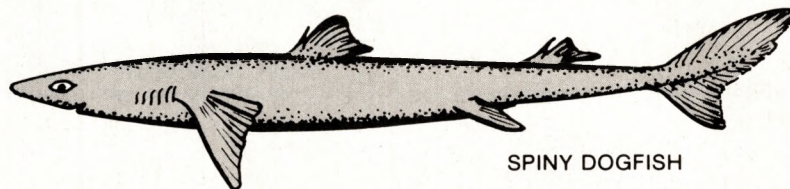
Shark meat unknowingly was consumed by the public during the war years, 1942 to 1945. Many markets at that time carried shark under common trade names such as whitefish, grayfish or just fillet. Choice cuts sometimes were sold under the aliases of swordfish and sole. Some merchants labeled the big steaks simply as "shark steak" and were amazed at the great number of sales. Also, hordes of American soldiers dined on shark during this period, finding it just as good as swordfish steak. Shark meat appeared in



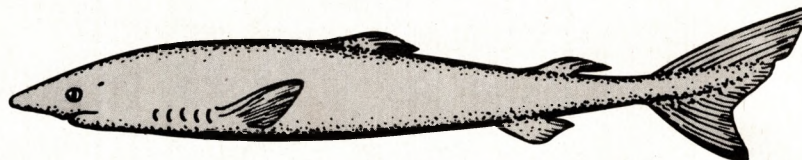
**At present, the abundant dogfish shark is a nuisance to commercial fishermen on both coasts . . . It is not unusual for a fishing vessel to catch 10,000 pounds of them in one tow . . .**



LEOPARD SHARK



SPINY DOGFISH



GREENLAND SHARK

retail markets and in restaurants where fish products had not been consumed before, as a result of the meat scarcity at that time. The product was well accepted by the public. Since then, however, other products have replaced shark flesh on the market.

Today, shark meat is inexpensive, nutritious, and just as tasty as it was during the war; but due to the seemingly automatic equation of the terms "shark" and "maneater", few people will eat it.

Fresh shark meat is eaten in most parts of the world, particularly in lands around the Indian Ocean. Fish sausages have been popular in Japan for many years. They were made with tuna until the manufacturers found that shark meat is much less expensive and just as good as tuna.

In Mexico, dried shark meat is sold in markets in the larger cities. Over the counter, it is sold most often as *bacalao* (dried codfish). The dried form solves shipping and storage problems and provides low cost meat.

The shark fishermen of Mexico fillet and skin the sharks, brine the meat for one day, and then hang it up to dry in the hot sun. Shark fillets need between three and five days to dry sufficiently before they can be shipped.

Sharks caught in Mexico give up an average of 77 pounds (35 kilos) of meat. The Mexican fishermen regard the tiger shark with special favor because of its greater bulk and fine skin. Brown sharks are the most numerous, followed by hammerheads, then blacktip sharks. Bull sharks and horn sharks are taken in much smaller numbers. Very few makos, bonnets, tigers, leopards, nurse sharks, and threshers are taken. Sometimes, the

very rare great white shark will be taken. All of these sharks are dried under the very same treatment. They all taste about the same, but the smaller members of any species are better because they are more tender.

In the United States, a very small market for shark meat does exist. The commonly marketed sharks are the mako, leopard, sevengill, sixgill, soupfin, thresher, brown smoothhound, and the spiny dogfish shark. These sharks reach the consumer in the form of steaks or fillets. Also, the fins of the soupfin have a historical and continuing demand. The fins are used as the basis for sharkfin soup, a delectable dish of Chinese origin. If suitable markets can be developed, most of these resources are capable of supporting a large harvest.

The only period of time that sharks were in great demand was during the shark boom that started in 1938. Use of shark livers for extraction of vitamin A caused an increase in shark landings in California from less than one million pounds in 1937 to over nine million pounds in 1938. Demand remained high for more than a decade. But as quickly as the fishery developed, it collapsed in the early 1950's due to development of synthetic vitamin A. The shark boom affected the whole world as well as nearly wiping out most of the soupfin sharks. Almost an extinct species, the soupfin is gradually recovering.

#### SHARK POISONING

Worldwide, shark meat (the musculature) is probably the safest fish to eat. The flesh of very few sharks is toxic, and all of the others are edible. There are several species of tropical sharks that have

toxic livers. Illness caused by eating toxic sharks is called "elasmobranch poisoning."

The flesh of any toxic shark has been found to be only mildly toxic and seldom will cause more than a mild gastrointestinal upset and diarrhea — probably less severe than some laxatives. The flesh of the Greenland shark (*Somniosus microcephalus*) of the Arctic and North Atlantic has been observed to cause intoxication on numerous occasions to man and sled dog. It was found, however, that the Greenland shark was feeding in areas subject to heavy man-made pollution.

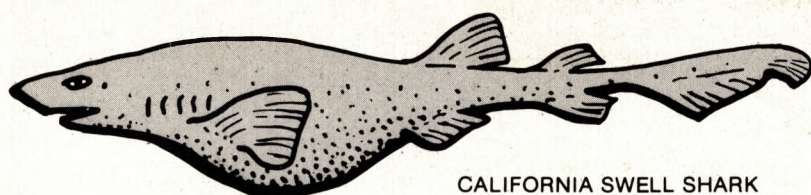
The California swell shark (*Cephaloscyllium uter*) also has been found to have toxic flesh. It will cause nausea and diarrhea when eaten. The toxic effects of this small shark do not seem to be related to pollution.

The most severe form of poisoning results from eating shark liver. Eating the liver of some tropical sharks may cause severe intoxication and sometimes death. Cooking the liver does not destroy the poison. The obvious prevention is to avoid eating the liver of any shark, especially the liver of large tropical sharks.

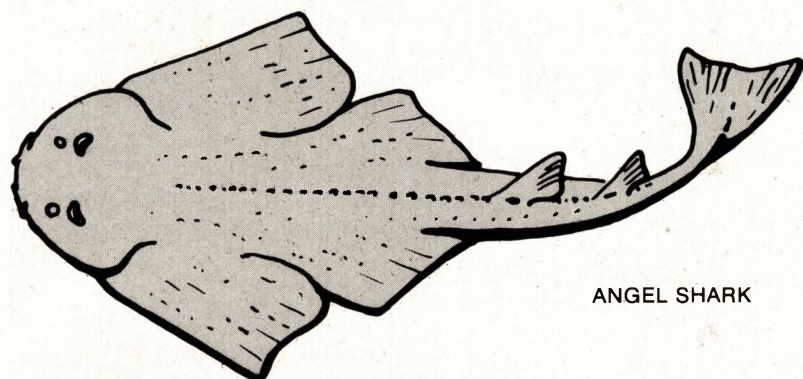
#### CLEANING AND HANDLING SHARK

A few simple precautions taken right after the shark is landed will insure its freshness and delicious flavor. Shark meat can be eaten fresh from the sea if eviscerated and chilled soon after catching. If not handled properly, some sharks will develop an unpleasant ammonia odor. If a shark is not eviscerated, the urea will break down to form ammonia and will infiltrate the meat and cause the unpleasant ammonia odor.





CALIFORNIA SWELL SHARK



ANGEL SHARK

***In the United States a very small market for shark meat does exist. The commonly marketed sharks are the mako, leopard, sevengill, sixgill, soupfin, thresher, brown smoothhound and the spiny dogfish.***

Eviscerating and chilling soon after catching will prevent this, or if the odor develops a few days of freezing should eliminate it. Another method of eliminating the ammonia is to soak the shark meat in brine for 12 hours. The suggested brine mixture is one cup of salt, one cup of sugar, and two quarts of water.

To eviscerate a shark, slit the stomach open from anus to gills and remove the viscera. Leave the head on to help preserve the shark. It should be kept cool by putting it on ice or in a wet burlap bag to retard decomposition. Keep the bag wet so that evaporation of the water will keep the shark cool.

#### FILLETING AND SKINNING

A shark may be filleted or steaked the same as bony fish. To make filleting easier, use a good fillet knife. The blade should be thin, narrow, and razor sharp with length enough to span the width of the widest shark you intend to fillet. When cutting through the skin, stab a hole with the knife and cut with the blade at about a 90 degree angle to the skin. At anything less than 90 degrees, you'll be pushing the blade back and forth across the surface of the sandpaper-like skin, and you may wind up with a knife that won't cut cream cheese. You will have to sharpen your knife often anyway. To maintain a sharp edge on your filleting knife use a stone and a steel. The steel will provide a longer lasting edge.

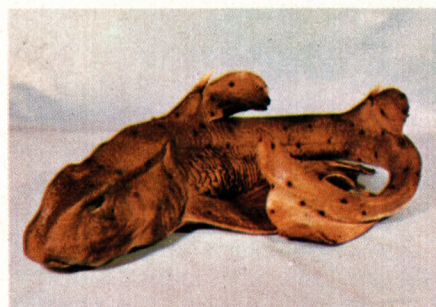
Parts of this article are excerpted from *THE EDIBLE SEA* by Paul and Mavis Hill, published by A. S. Barnes & Co., Inc. For autographed copies of book, contact Educational Services; P.O. Box 15145; Long Beach, CA 90815.

#### To Fillet A Shark:

1. Make a deep diagonal cut behind the gill slits. Cut at an angle that will get as much meat off the top of the head as possible.
2. Turn the knife flat and slice along the backbone and over the ribs to the tail. Leave the skin attached at the tail to help remove the skin in the next step. On a large shark, slice down the back from head to tail along the fins and spine while separating the meat from the bones and cartilage.
3. To remove the skin, lay the fillet, skin side down. Start the cut at the tail between the skin and meat. Work the knife along the skin while cutting the fillet away from the skin.
4. Remove the rib section if you left any of it on. Remove any other bones you may find.
5. Turn the shark over and repeat the procedure on other side.
6. Wash fillets if necessary. Refrigerate or freeze until ready to use.

#### SHARK RECIPES

Most shark meat is relatively dry and firm and adaptable to all types of cooking, so long as it is given the necessary moistening. This can be in the form of butter, sauce, or stock. It can be baked with a moist stuffing and basting liquid. You can also barbeque, broil, or oven-fry shark steaks. The flank (or belly) pieces have more fat and are more tender and are good for barbequing and kebabs. A good example is the mako (bonito) shark. It is virtually indistinguishable from





swordfish and can be substituted in all recipes calling for swordfish.

There is a family of sharks whose flesh somewhat resembles halibut. It is the smoothhound family and includes the leopard shark, sand shark, mud shark, gato, and paloma. Considerable quantities of smoothhound have been sold in markets as grayfish, however, it is a fish which many unenlightened surfcasters consider a nuisance.

Most any shark meat can be used in the following recipes with successful results.

#### SHARK KEBAB

- 2 tablespoons olive oil
- 3 tablespoons lemon juice
- 1 teaspoon salt
- 2 tablespoons grated onion
- 1 tablespoon chopped parsley
- 10 bay leaves
- 1½ lbs. shark, cut into 1½-inch cubes
- As needed:
- button mushrooms
- cherry tomatoes
- green peppers
- pearl onions

Combine in a bowl olive oil, lemon juice, salt, onion, parsley, and bay leaves. Add shark cubes and toss gently. Cover and refrigerate overnight or at least 6 hours. Drain off liquid and save for basting. Alternately thread on skewers the shark cubes, mushrooms, cherry tomatoes, green peppers, and pearl onions. Grill about 4 inches above hot coals for about 5 minutes on each side. Brush with reserved liquid during grilling. Serves 5 or 6.

#### SHARK N' CHIPS

- 2 to 3 lbs. shark fillets
- 1 cup flour
- ½ teaspoon baking powder
- ¼ teaspoon salt
- ½ teaspoon paprika
- ⅛ teaspoon pepper
- 2 eggs, beaten
- ½ cup water or beer

Cut fillets into serving pieces ½-inch thick. Mix dry ingredients and stir in eggs and water to make batter. Beat until smooth. Dip shark pieces into batter and deep-fry at 375°F, turning once after 3 to 4 minutes until golden brown. Drain and serve with malt vinegar and salt. French-fried potatoes are the "chips."

#### COCONUT CREAM SHARK

This is a modified version of a South Pacific baked fish dish.

- 3 lbs. shark fillets
- 2 tablespoons salt
- 1 oz. coconut extract
- 1½ cups cream

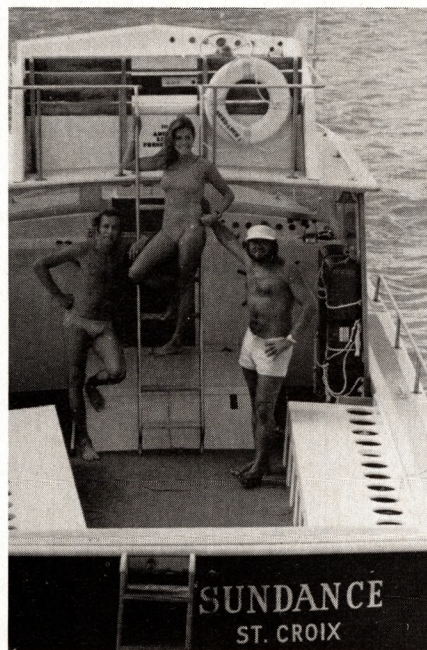
Sprinkle fillets with salt and lay in buttered baking dish. Mix extract with cream and pour over fillets. Bake 350°F for about 30 minutes.

#### SHARK AU GRATIN

- 2 lbs. shark fillets, serving size pieces
- 6 oz. package sliced cheddar cheese
- Sauce:
- 2 tablespoons butter or margarine
- 1 cup chopped onions
- 2 tablespoons flour
- 1 teaspoon salt
- ½ teaspoon oregano, whole
- ½ teaspoon parsley flakes
- 1 cup milk

Place a layer of fillets in buttered shallow 8-cup baking dish. Cover each fillet with a slice of cheese. Continue layering using remaining fillets and cheese. Melt butter in a sauce pan and saute onions. Stir in flour to thicken. Gradually add milk, stirring constantly. Add salt, oregano, and parsley and stir till well mixed. Pour sauce over fillets in baking dish and bake at 375°F for 30 minutes.

### RESORT UPDATES



#### St. Croix, Virgin Islands

V. I. Divers Ltd. has put a newly launched custom dive boat into operation in St. Croix. Designed by president Bret Gilliam, the 40-foot craft is powered by a GM6-71 diesel and is capable of speeds to 18 knots. The craft, called *Sundance*, has built-in seats and racks for 26 tanks, a custom teak dive platform with a fold-down ladder, fully carpeted including cockpit decks, has an on-deck freshwater

shower. Gilliam, who says he designed the boat for comfort that would meet the demands of modern divers, will only carry 12 divers per trip even though the boat is licensed for 23 passengers.

#### Bonaire

Peter and Alice Hughes, owners of Dive Bonaire at the Flamingo Beach Hotel, have announced the appointment of Deaniel Trimarco as Operations Manager.

Trimarco is a certified photographic instructor (YMCA, PADI, SSI) and will be responsible for developing Dive Bonaire's photo department and will be available to assist and advise visitors to the resort.



#### Palm Beach, Florida

*Koller's Reef*, a brand new, custom, 37-foot Ensign skippered by Captains Don and Dorrie Koller is now available for charters in the Palm Beach area. *Koller's Reef* is fitted with a walk-through transom, large dive platform and freshwater shower and is Coast Guard certified to carry 20 divers. Charters are available through Seapro Scuba Center.



#### Kailua-Kona, Hawaii

Hawaiian Divers has added two new boats to its fleet, the *Point Opolu* and the *Ka Lae*. Both are 27-foot, diesel-powered Radons, licensed to carry 12 divers. Kit McNear, Director of Operations, says the boats also carry the latest in electronic equipment.

#### Pennekamp Park, Florida Keys

Diver's World of Key Largo has begun scheduling four hour reef trips daily aboard their boat, *Reef Diver*. Owner Ernie Krumbain says the new store's location cuts transit time to the reefs to 20 minutes.



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feet). **CONSOLES ICM150**—Console with TAG and MDI150. **ICM300**—Console with TAG and MDI300. **ICL150**—Console with TAG and LFG150. **ICL300**—Console with TAG and LFG300. **ICS150**—Console with TAG and SFG150. **ICS300**—Console with TAG AND SFG300. **TAG**—Underwater pressure gauge, reads to 3500 p.s.i.. **CTG**—Combo with TAG and LCG capillary gauge. **MTG**—Combo with TAG and MCG capillary gauge.



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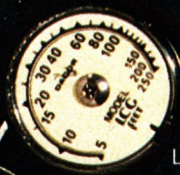
SFG150



LFG300



SFG300



LCG



MCG



WC



UWM2



UWM1



UWL1



WTO



WTM



WGC



WGM



ICM150



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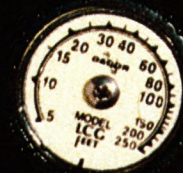
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## THE TOBERMORY TRIANGLE

continued from page 40

today. The bow lies in 70 feet of water, the stern section, which is in the best condition, reaches a depth of 150 feet.

About 17 miles north of Tobermory is Fitzwilliam Island where 12 schooners and steamers lie in their watery graves. The most famous is the magnificent *City of Cleveland*, whose length of 255 feet makes her the largest wreck around Tobermory. The wooden double-decked vessel had the masts of a schooner and the stacks and engines of a steamer. Constructed in Cleveland in 1882, she wrecked on the rocky shoal of Perseverance Island just off Fitzwilliam in 1901. The main part of the hull stretches over 200 feet underwater at an average depth of only 25 feet, but pieces of wreckage are scattered around the shoal in 10 to 60 feet of water. The machinery is immense and her monstrous propeller has a diameter of 10 feet. The only problem with the *Cleveland* is getting there; the site is a long trip in a slow boat. While part of the journey is within the protection of the islands, there is a distance of six miles in open water which could provide Tobermory with a brand new shipwreck if the weather should kick up. Obviously, the charter boats go there only in very good weather.

In a region famed for shipwrecks, Tobermory has properly won a reputation as the best of the great wreck diving areas. The ships that rest here speak of a frantic, more adventurous era now long past. The cold, clear water that entombs the vessels has also preserved them, holding Tobermory's cornucopia of wrecks for the divers who seek adventure below the stormy surface of Lake Huron.



## Decline in Deaths

According to statistics released by the Florida Department of Health and Rehabilitative Services there were 26 underwater diving deaths in Florida during 1977. This represents a 31.5 per cent decline from 1976 and a 50 per cent decline from 1974. Through the first four months of 1978, 13 deaths have been reported. The underlying cause of death is usually drowning but may also include air embolism, nitrogen narcosis, injury by boat propeller, heart attack or other mishap as a contributing factor.

The typical diving victim is a white male in his early twenties using scuba gear. The vast majority of deaths are the result of inexperience and carelessness. Occasionally, strong currents, rough water or equipment failure are contributing factors.

Despite Florida's fame as a saltwater recreational area, freshwater has claimed more diving victims. Cave diving is especially hazardous and requires a great deal of special training and equipment. Over 45 per cent of Florida's diving victims have been cave divers. Of the 10 freshwater deaths in 1977, 9 occurred in caves.

## Scholarships for Bonarian Teens

Cap'n Don Stewart, Director of Aquaventure/Habitat on the island of Bonaire, is organizing a scholarship program for Bonarian teenagers who show particular interest in man's relationship with the sea.

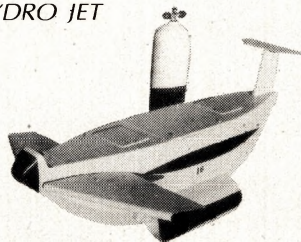
The scholarship will attempt to promote the "man-sea" concept, a detailed understanding of the mutual dependency that exists between man and the sea. Hopefully, greater awareness will help develop the conservation of life underwater.

Cap'n Don hopes to extend the scholarship to islands outside Bonaire, and eventually develop it into an exchange program for American students.

Each month the program will take potential scientists from Bonaire on a four-day trip to the Marine and Atmospheric Science Department of the University of Miami.

According to Cap'n Don, the program will be integrated into regular school studies so other students can benefit from the traveler's experiences. "This program should build greater interest in underwater ecology," says Don. "It will benefit communities in both Bonaire and the United States."

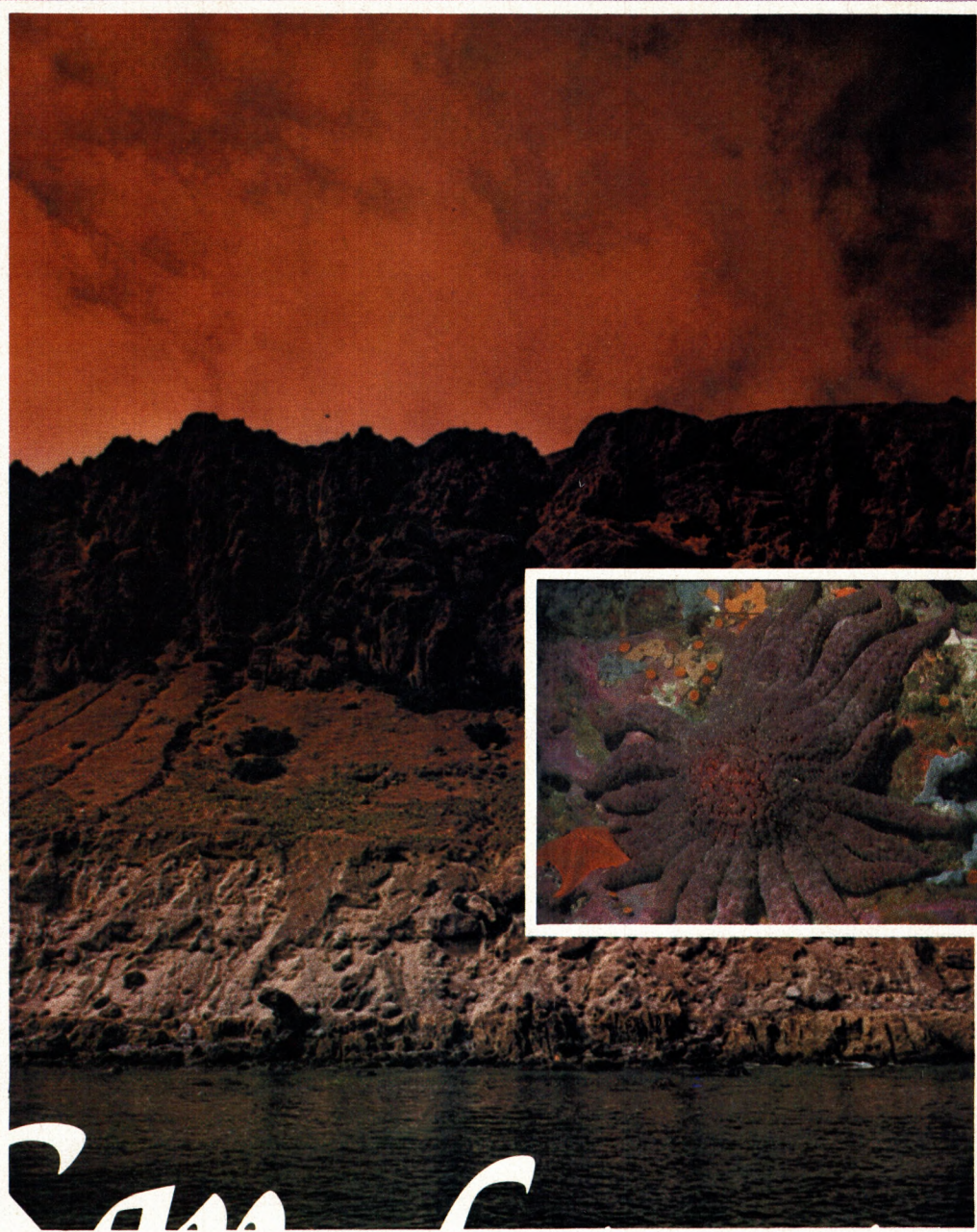
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Al Hornsby

# San Clemente



Al Hornsby

*California's  
Slumbering Giant*

*by Al Hornsby*



Swirling clouds of fish and prize-size abalones (below middle) make San Clemente a hunter's paradise. Good visibility and bright subjects like this soft coral (bottom) are the norm around this Island.



Al Hornsby



Jim Cooluris



Al Hornsby

As we drifted up the steep wall, our exhaust bubbles rose rapidly before us and glistened silver against the rich blue canopy some 80 feet above. Pink gorgonians, moved gently in the soft current and kept syncopated time with the sea's easy rhythm. Colorful fish darted from the cracks and crevices of the submerged cliff, and in deeper holes, the twitching antennae of a host of lobster nervously sensed our quiet passage. My flash intermittently splashed colors across the stone as I photographed; reds, pinks, and rich yellows in unexpected patterns. We paused as two divers, lost in their own reverie and awe of that beautiful place, crossed our ascending path 60 feet above us and became graceful silhouettes in the meandering beams of penetrating sunlight.

Another travel story about some exotic, far away place that you will probably never see? Maybe so, but if you live in Southern California, that exotic place is only a few hours away. Some 45 miles out of Long Beach, lies a quiet, sleeping colossus. Sprawled in an east-west direction, its rough countenance juts suddenly out of a deep and crystalline sea, a product of the violent upheaval that exposed the California Channel Islands.

Approaching by boat, the land mass appears through the sea mists; a huge flat plateau raised straight up from the Pacific, bordered by towering cliffs. Its central mountains reach several thousand feet in elevation, and over its rugged landscape wander a variety of wildlife species. Found in great numbers are wild goats, pigs, deer, foxes, and even on the most inaccessible peaks, the majestic bald eagle. Along the shoreline are colonies of sea lions, and occasionally, huge elephant seals can be spotted on isolated rock beaches.

San Clemente itself is, however, for the eyes only. The entire island, once the quiet home of an Indian community, is now controlled by the U.S. Navy and going ashore is strictly forbidden. Visitors must be content to merely gaze at its great natural beauty from the sea. The sights are especially splendid in early spring, after winter rains have turned the island a rich green. Tall grasses and



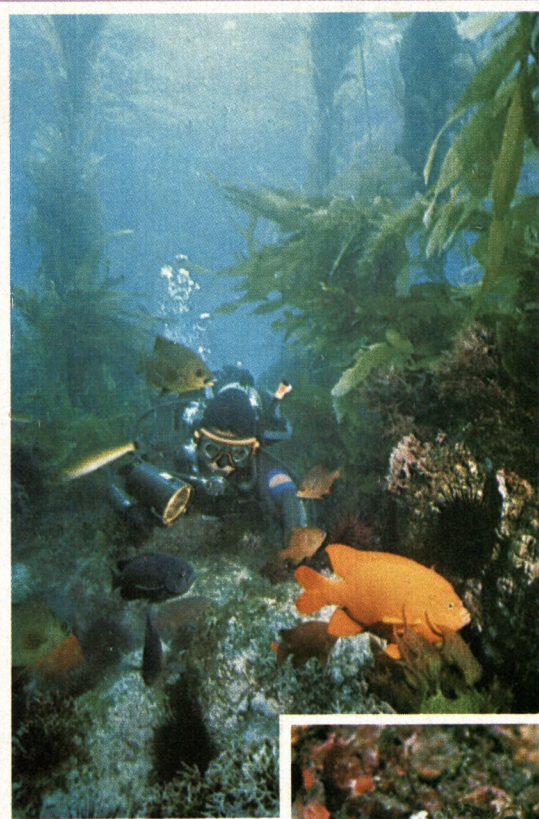
wild oats thickly carpet the rolling highlands, and colorful wild flowers peek from within.

For the diver, the real excitement lies just offshore. The waters surrounding San Clemente undoubtedly offer some of the finest diving in the country. The prevailing northwest swell is effectively blocked by the island's length, and a large area of calm, still water results. Far from pollution or sediment producing sources, the deep ocean and rocky bottom insure excellent visibility. On all but the stormiest days 60 to 80 foot water clarity is considered normal. Anyone who dives San Clemente with any regularity will report that 110-plus days are not at all uncommon.

If the clear water is not enough to make this area a diver's paradise, the tremendous variety of sea life and the underwater landscape certainly are. Because of its distance from the mainland, man's predation has not yet seriously threatened San Clemente's wildlife haven. The numbers of fish, crustaceans, molluscs, marine mammals, and other animal groups to be found in the area are impressive. The deep south side reefs are among the few places remaining on the U.S. west coast where 350-pound black sea bass are still seen regularly. Many species of food fish, including yellow-tail tuna, cod, sheepshead, calico and kelp bass, and even the fast-moving white sea bass can be found. Huge schools of jack mackerel sometimes surround the diver with moving walls of flashing, shimmering bodies.

At least three distinct types of diving can be enjoyed around San Clemente. As with most of the fine areas in Southern California, you can dive in thick kelp forests which rise from the rocky sea floor to spread their thick surface covers of green and gold. Awesome drop-offs and perpendicular walls in many places extend from the surface downward to well over a hundred feet. For the advanced diver, there is one final, unique thrill — a visit to the deep undersea pinnacles and the famous purple coral banks.

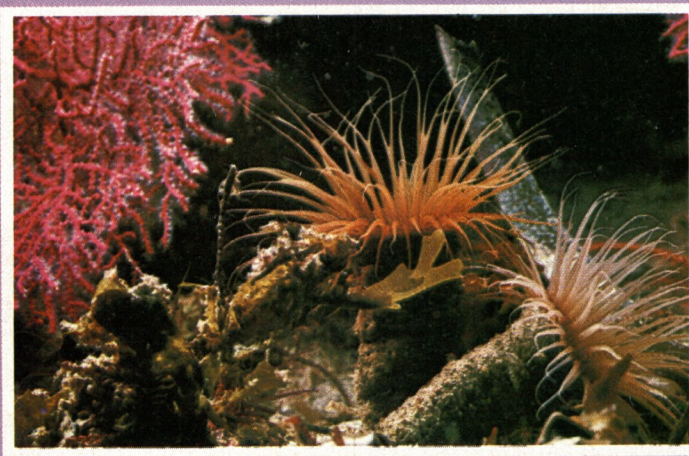
A very popular location near the east end is known as Fish Hook or Little Flower Reef. Several rocks break the surface near shore, and a steep drop-off begins in 20 feet of water.



Jim Cooluris

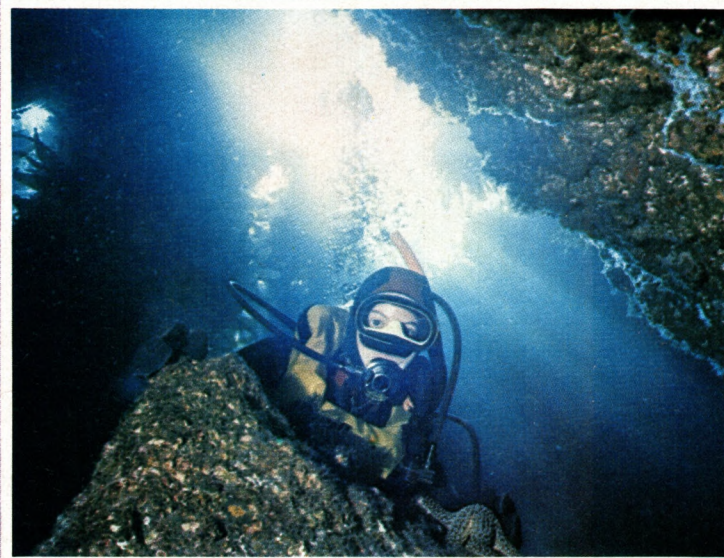


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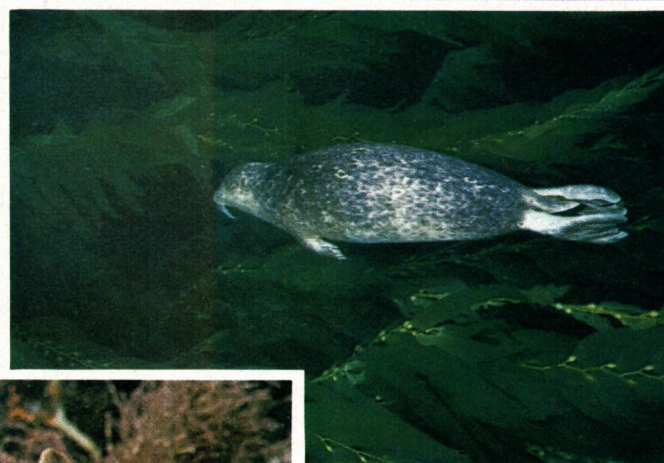




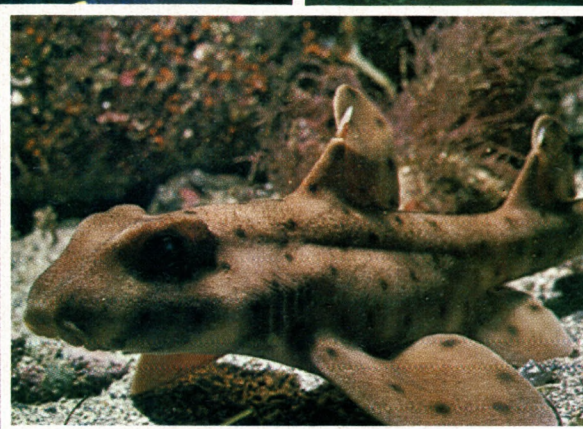
Pausing at a ledge along the sheer drop-off, the diver is backlit by sunbeams filtering through kelp stalks overhead. Legal-size abalones are easily measured with an ab iron, standard tool for removing the tenacious shellfish from their rocky perches.



Dennis Graver



Jim Cooluris



Al Hornsby

From the thick plant growth at the surface to the sand bottom at the cliff base is vertical of 170 feet. Great numbers of sea fans and soft corals cling tenaciously to the face, and many bass, sheepshead and Garibaldi are seen. Since San Clemente is of volcanic origin, the hillsides are pocked with crevices and caves; the underwater scene is no different. Deep cracks cut into the wall and they are usually packed full

of small to medium-sized lobsters. A number of very unaggressive moray eels can be spotted and photographed as well. They seem content to look calmly out from their rocky abodes.

Just around the east end tip is found a very interesting area known as the Pyramid Head High Spot. One-half mile south of the point are a couple of pinnacles rising from over a hundred feet down to within 60 feet

of the surface. This is an exciting dive for the experienced, and it offers a unique underwater sight. At the bottom of the main pinnacle, covered with rich, pinkish anemones, is a natural stone archway curving gracefully over the sandy bottom. Schools of small fish guide through the passage and the photographer is offered a breathtaking scene. For the hunter, yellowtail frequent the area

*continued on page 51*



and abalone can be found.

Moving westward, halfway down the island is Seal Cove, a rocky area with thick kelp inside. A colony of sea lions resides in the cove and divers often see the graceful animals underwater as they play and feed. It is a very special thrill to be approached by one of them for a game of underwater acrobatics. There are vast numbers of pink and green abalone in the shallows, and lobsters abound. Moving to the outside, there is a sheer drop to 120 feet and rare purple coral grows along the deep side. This fragile cold water coral is protected by law and should not be taken or otherwise disturbed.

Still on the south or 'back' side of the island, there is a beautiful reef one-half mile off the small peninsula known as Eel Point. When weather permits, this reef can be among the most bountiful game diving areas of San Clemente. The reef starts in shallow water, 25 feet, and then drops away to over 100 feet down the sides. It is thickly covered with kelp, many of the strands extending to the surface from 60 feet down. Many abalone can be taken, and some of the largest lobsters in these waters make the rugged reefline their home. Calico and kelp bass are plentiful among the deep caves and overhangs. On calm days, it's an exciting dive for the photographer as well. Colorful nudibranchs crawl about the bottom and schools of blacksmith and opaleye drift through the swaying kelp forest. Large bat rays glide through the area, and many different species of sea stars crawl about in constant search of slow-moving prey.

Among all the favorite dive sites at San Clemente, the most well-known is the Coral Banks. Three-quarters of a mile off Target Rock, at the extreme west end of the island, a reefline and several pinnacles rise up from deep water to within 60 feet of the surface. Stubby palm tree kelp grows over the reef, and purple coral is in abundance. The deep colored coral covers much of the bottom in some places, and on sunny days, the scene is reminiscent of a vast field of African violets. Large anemones in whites, reds, and greens cling to the stone and yellow-tail tuna and huge schools of tiger mackerel often swirl over the majestic scene, giving the entire area a story-book surrealism.

The list of exciting sites if by no means complete. Because of the great size of the area involved, it would be impossible to describe all the popular places. When visiting San Clemente, caution must be exercised. Since the Navy uses parts of the island for gunnery practice, live shells may sometimes be discovered and should

*continued on page 58*

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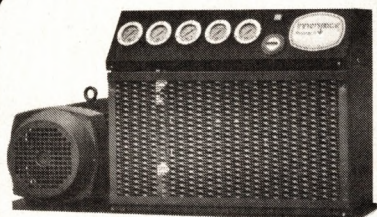
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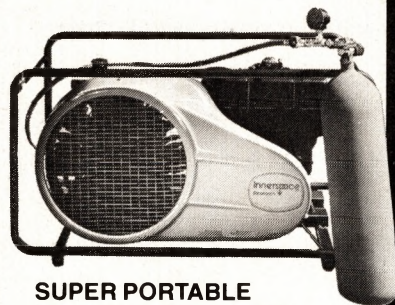
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# Instructor Notes

## What's A Buddy Check?

By Lou Fead

The dive is beginning! Divers are suited up and heading towards the water. The leader says, "OK, time for a buddy check!" The crowd stops moving, starts milling about, poking and pulling equipment, reading pressure gauges, turning tank valve handwheels. Amidst the gyrations, one diver mumbles "humm, I can't see anything wrong with my buddy." Behind the words lies the thought: 'I wonder if I have checked everything I am supposed to?' And so goes the standard 'buddy check' in a basic scuba class, all usually without anyone benefiting from it, or even knowing what it is all about.

Another dive begins, this time with old-time divers. They are suited up and headed towards the water. The leader stays silent, the dive submerges. What happened to their buddy check? Nothing, there was none!

Why do training courses do a buddy check; and, why do diving divers not do a buddy check? The



**Locate the inflator and  
quick releases.**

difference in modus operandi would be eliminated if the classes stop teaching buddy checks, or, if old-timers start using them. Which is best?

I propose, as an active diving instructor, that scuba courses stop teaching the buddy check as it is taught now, and, that old divers start using the buddy check as it should be taught. Let us delve into our experiences for examining the buddy check's status quo and status as it should be!

## STATUS QUO:

Historically, whenever a buddy check is mentioned, the response is one of uncertainty and confusion. If asked what a buddy check includes,

***The purposes of a good  
buddy check are to  
make the dive safe and  
efficient . . .***

the average diver will answer with any or all of the following: check that your buddy's air is on, the straps for tangles, that the tank is secure in its backpack, the wetsuit zipper's are closed, that the weight belt buckle is free for releasing, the vest CO2 lanyards are free for pulling, etc., ad nauseum. There is no complete list of such checks because they are all made in the name of safety, and safety knows no bounds.

How about the old-time diver? Why does he not do a buddy check? Because he knows his buddy, like himself, is capable of dressing, so he does not need that kind of check. If the buddy does not turn his air on, he will ask later, or struggle it on himself. If his straps are twisted, he will straighten them. If his tank slips out of its backpack, he'll know. If his wetsuit is not zipped up, he will find out soon enough. And why worry about the weight belt and vest? No experienced diver is going to dive into trouble and need those emergency devices! So, why do a buddy check when it serves no purpose?



## Discuss emergency procedures.



### STATUS AS IT SHOULD BE:

The purposes of a good buddy check are to make the dive safe and efficient: Safe by soothing a diver's anxieties, and efficient by eliminating confusion. The proper buddy check does both to make the dive more fun!

The correct buddy check, as it should be taught and used, is not for checking your buddy, but, for *having your buddy check you*. It is the most selfish, non-emergency action a diver can take to make his sport worthwhile.

The selfish buddy check that ensures our buddy can effectively assist us in the water, especially if we are disabled (seasickness, loss of consciousness, etc.) is as follows:

### SELFISH BUDDY CHECK

- A. Locate inflators and releases.
- B. Exchange dive signals.
- C. Discuss emergency procedures.

### Locating Inflators and Releases:

Most of the difficulties in sport diving happen on the ugly surface. The prime solution to such problems is to make the victim *float better*. For divers, that involves three basic actions:

1. Inflating buoyancy devices (vests, BC, back vests, waterwings)
2. Dropping weights (belt, game bag, treasures) and,
3. Jettisoning the tank (there goes all that money).

*continued on next page*

## 1978 INSTRUCTOR TRAINING COURSES (ITC)

*The following list is for quick reference only. For more information contact the appropriate organization directly.*

### NASDS

Sept. 25/San Diego, CA  
National Association of Skindiving Schools  
641 West Willow St.  
Long Beach, CA 90806

### NAUI

August/Quebec, Canada  
August/British Columbia, Canada  
August 11/Chicago, IL  
August 13/San Francisco, CA  
August 18/Ontario, Canada  
Sept. 2/Melbourne, FL  
National Association of Underwater Instructors  
Box 630  
Colton, CA 92324

### PADI

August 4/Jacksonville, FL  
August 8/Stevens Point, WIS  
August 12/West Indies  
August 12/Albuquerque, NM  
August 12/Long Island, Bahamas  
August 26/Chicago, IL  
August/Selinsgrove, PA  
Sept. 9/San Diego, CA  
October 21/San Diego, CA  
October/Okinawa  
November 3/Jacksonville, FL

November 23/Bermuda  
December 2/San Diego, CA  
Professional Association of Diving Instructors  
2064 N. Bush St.  
Santa Ana, CA 92760

### PDIC

Sept. 18/Monterey, Ca  
Professional Diving Instructor College  
598 Foam St.  
Monterey, CA 93940

### SSI

August 12/Milwaukee, WIS  
Sept. 9/Lake Ozark, MISS  
Nov. 4/Houston, TX  
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1449 Riverside Dr.  
Ft. Collins, Col. 80521

### YMCA

August 12/Los Gatos, CA  
August 26/Los Gatos, CA  
Sept. 15/Pensacola, FL  
Sept. 23/Springfield, OH  
Sept. 29/Pensacola, FL  
Oct. 7/Calowell, NJ  
Oct. 13/Pensacola, FL  
Oct. 21/Calowell, NJ  
Oct. 28/Cedarville, OH  
Nov. 3/Calowell, NJ  
Nov. 25/Springfield, OH  
YMCA National Scuba Program  
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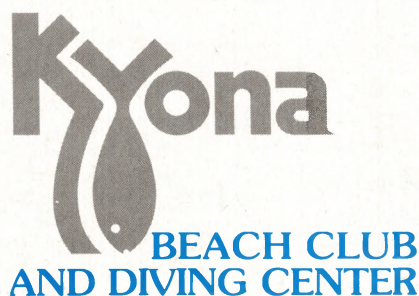
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## Instructor Notes

Inflating the many different buoyancy devices in the market-place and water now, can be done by: CO2 cartridge systems, push buttons and hoses for direct inflation, separate BC bottles with twist valves, bottles that twist, oral push-to-open valves, and even some pull-to-open oral valves. Since your buddy may not know your system, it is best to have him actually inflate your buoyancy device during the buddy check to make you *float better by inflation*.

Weight belts are somewhat less confusing, but they often hide behind other flopping equipment to make up for their simplicity. Physically touching the buckle reveals its location for quick flotation. Game bag clips and goodie bag snaps also need touching and operating to dump heavy treasures in making you *float better by dropping weights*.

Tank harnesses vary too. Have your buddy touch the buckles they would release in saving your life. Jettisoning a tank may take only a pound or two of submerged weight off your body, but it gets rid of the restriction and inertia of the harness and tank, which can mean much to your survival. Though it may seem drastic, you will generally *float better by jettisoning your tank harness*.

### Exchanging Dive Signals:

To have a buddy underwater in a real sense, you must be able to communicate with him. Fumbling around on the bottom figuring out charades wastes much more time than it takes to exchange and explain signals before the dive.

Try the American National Standards Institute (ANSI) Skin and Scuba Diving Hand Signals, approved on August 4, 1976, as your basic signals (Figure 1). Exchange them with your buddy on the surface before diving. Amplify them with *natural, local, and special* signals to expand your vocabulary efficiently underwater.

*Natural* signals are those whose meanings are obvious in any language. Typical are such as: nodding your head for 'yes', shaking it for 'no', hugging yourself for 'cold', and pointing to a watch for 'time?'

*Local* signals generally imitate

local critters. Wiggling two straight fingers for 'lobster', cupping a hand for 'abalone', and swimming a hand for 'fish' are examples.

*Special* signals pertain usually to the dive objective being pursued. An instructional dive may include pointing to the inflator for 'inflate', a flat hand with palm down for 'level off', and two index fingers alongside each other for 'get with your buddy'. Your imagination limits the signals you can use for increasing the joy on your dive.

### Discussing Emergency Procedures:

Running out of air is an unlikely event underwater unless a diver does not have, or ignores, a submersible tank pressure gauge, reserve valve, reserve regulator, or other 'low air' warning. Just to relieve anxieties for that rare occurrence, the prudent buddy team evaluates expected diving conditions and establishes a preferred order for responding to an out-of-air situation.

## Plan your dive — dive your plan.



RICHARD H. STEWART

Smart divers would consider the diving territory, depth, equipment, and divers' capabilities in selecting the best return to the surface without air. A cave diver certainly would rule out an emergency swimming ascent (ESA — exhaling while swimming up) while buddy-breathing off a bipus (octopus) rig is a more viable alternative to drowning. A deep tropical diver in clear water could choose a direct ESA or buddy-breathing on the bottom before and ESA.

Each choice includes planning the dive to make the choice workable. If buddy-breathing is chosen, then the



buddies (especially new ones) should buddy-breathe before the dive to ensure they know how together. Doing the practice buddy-breathing with masks on to simulate underwater vision impairment, makes the practice more realistic and beneficial. They would also plan to stay close to each other during the dive to let buddy-breathing begin quickly, if needed. If bipus-breathing is the choice, it should also be practiced on land. An ESA can only be practiced in the water, and should be routinely.

To prepare for an out-of-air situation by ignoring it, as many divers do, is foolish. To prepare during a buddy check is wise and makes for a safer, more comfortable dive.

Other emergencies worthy of pre-dive discussion are 'lost buddy' and 'entanglement'. A deliberate 360° horizontal scan followed by a second 360° turn-around looking up for the buddy or his bubbles, and maybe a third 360° looking down (if you are off the bottom) will either find the lost buddy, or, confirm his absence. If he is lost, surfacing, by all members of the buddy team, including the lost one, should reunite them.

Entanglement is usually much simpler for a buddy to clear than for the diver himself. Kelp, mono-filament fishing line, barbed wire, even a diver's float line yield easily under a buddy's untangling.

Emergencies of a local nature should also be covered to develop a plan for escape.

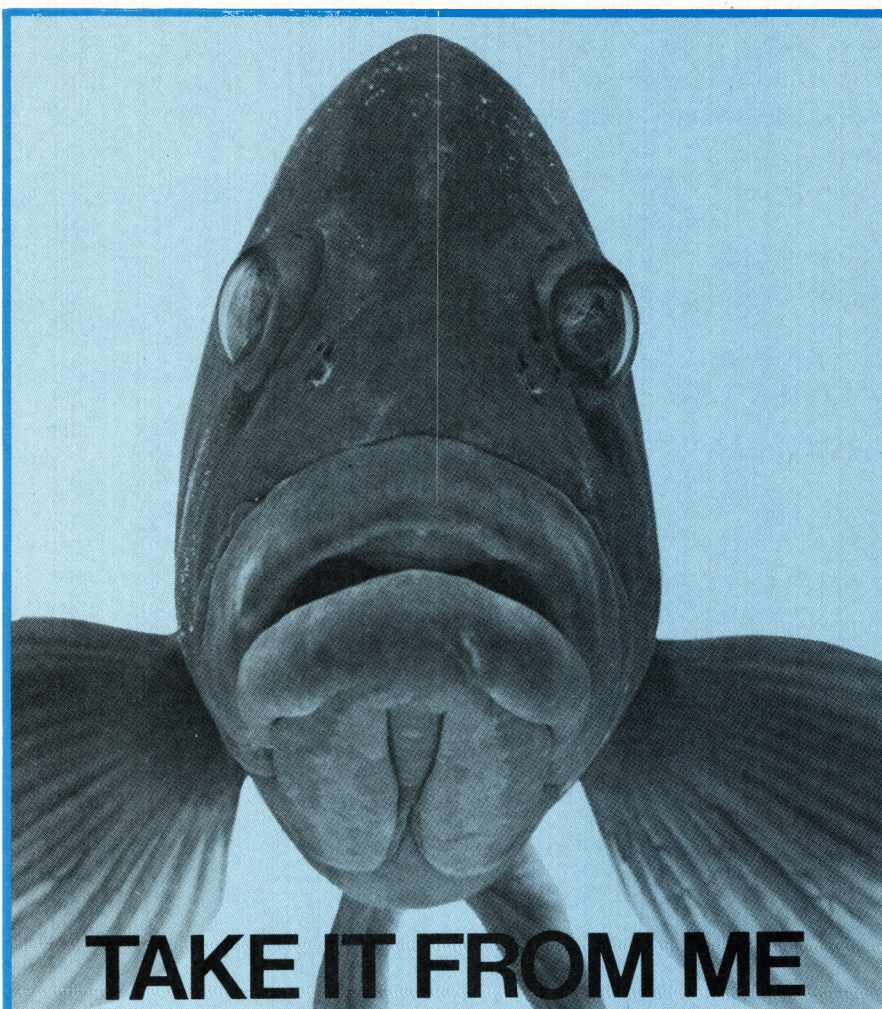
#### PLAN YOUR DIVE:

The selfish buddy check comes as the last part of planning a dive after (1) advising a non-diver of your dive plans for search purposes, (2) deciding to dive, and, (3) planning dive details including setting limits of depth, time, and minimum air for surfacing.

#### DIVE YOUR PLAN:

After the selfish buddy check, you can dive assured that your buddy will be able to adequately share the responsibility for the safe conduct and successful completion of the dive. Once the dive is planned, you need only DIVE YOUR PLAN to reap the unlimited benefits of diving underwater with a buddy.

Use your selfish buddy check to increase your diving pleasure!



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# WORKING DIVER

By Jules Brenner

## UNDERWATER

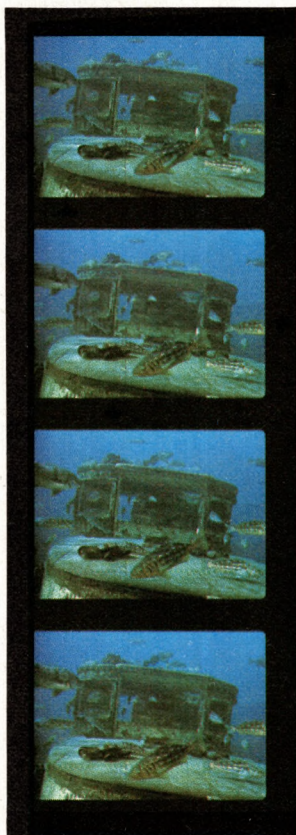
Underwater commercials are as scarce as ten inch abalones, but there's hope. The Cousteau specials had their effect. So did "The Deep" and "Jaws," as well as older films like "Blue Water, White Death" and "Day of the Dolphin." They have made ad men more aware of the underwater world as a viable and unique staging arena for their visual messages.

The underwater world is nothing new to the Southern California Gas Company. You might say they have a predilection for ocean-oriented subjects. In the past they have sponsored "The Seven Seas" and "Men of the Sea." So, when Doyle Dane Bernbach, a major advertising agency, was developing an ad campaign to convey a special story in six commercials for the gas company, underwater suggested itself for at least one of them, and Marineland became the natural choice.

The evolution of a TV commercial is unique. Whether your interest is simple curiosity, attraction to underwater photography, or the lure of income derivable from working underwater, a study of the procedures that bring an underwater commercial into being might prove interesting.

The tone of a commercial is as often dictated by what it cannot say as by what it wants to say. The official story that Doyle Dane Bernbach had to tell is that "using gas for cooking, comfort heating, and water heating is using available energy most efficiently and is in a very real sense conserving energy." No mention of any competitive energy sources? There's hardly any need.

The basic concept of a commercial, at this stage, is in the hands of the art director and copy writer. In this case, the men involved were Wade Davis and David Balkin. Working with the tremendous visual effect of a 554,000 gallon fish tank to



Jules Brenner



Eric Anderson

*As opposed to still underwater photography, cinematography requires the use of several support divers, more coordination and, above all, patience.*



Eric Anderson

tell the story, they had only to point out that, if Marineland chooses to heat its massive volume of water with gas, it must be the best form of energy to use in your home. Convincing? It's a hard argument to fight.

They developed this basic idea and laid it out in storyboard form. The storyboard was presented to the account team for cost concepts to be evaluated. Approving it, the account team then presented it to the gas company.

Once the storyboard was approved, Davis and Balkin worked with the agency's television producer, Reed Springer, in selecting the specific production service to use. This is done by sending copies of the board to various production companies for bidding. Comparative prices, services and quality standards are all figured into this critical decision.

The chosen production house and their director then work with the agency team in casting and other details of production. It's at this stage that a cameraman is selected. Somehow, my name was brought in, and a call by Lou Stroller of Z Productions was put through to me.

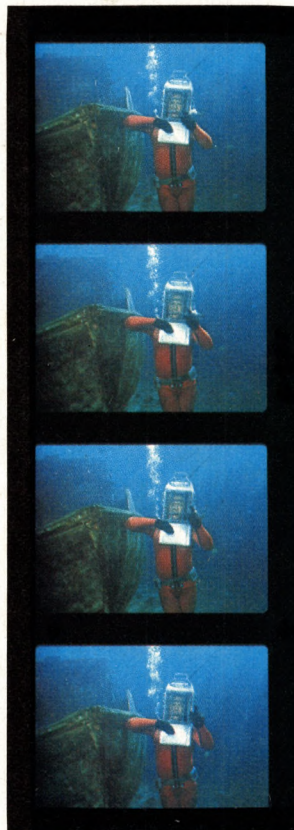
A luncheon meeting was arranged with the entire team. The director, Dick Clarke, explained his approach in terms of the storyboard and in terms of achieving the best visual effect. The agency team discussed the factors and values that concerned them. All these things were evaluated in terms of practical considerations of filming underwater, light and color effects and limitations, fish action and time and budget. With all these things in mind, I set out to order the necessary equipment and line up a crew.



# COMMERCIALS



Eric Anderson



Jules Brenner

If there is anything underwater filming dictates, it's simplification, so I planned to have only one person in the water with me, besides the actor. This was to be Johnnie Carroll, my diving grip. My assistant cameraman, Eric Anderson, was to be wetsuited and prepared as safety and back-up diver, but would primarily stay dry to load and unload the Birns and Sawyer underwater Arriflex 16mm camera. Jake Jacobs, Marineland's chief diver, was the actor. Tom Dougherty and Cris Lynch filled out the crew by providing power and auxiliary lighting from the surface.

The day of shooting was sunny-bright and I didn't have to refer to my Kodaguide (though I did use my underwater Sekonic meter). Johnnie and I positioned the Birns and Sawyer surface powered underwater lights on sandbagged

century stands in the water, while the sound man installed a speaker inside Jake's diving helmet. Jake entered the water and I did my final lighting balance.

The commercial starts with a close-up of Jake's face inside the helmet. As he begins to speak to a pre-recorded sound track, he backs up until the magnitude of the tank and its inhabitants are fully realized. The lights were necessary to illuminate Jake's face inside the helmet, and to provide a transition from the quality of artificial illumination to the soft blue-green of ambient underwater light in the course of the backward movement.

The action of the fish was important to the effectiveness of the concept. Since it was an uninterrupted scene we couldn't use the beginning of one take and the end of another and we couldn't cut to a close-up of a doleful sheephead or a flirtatious

dolphin, so we were at the mercy of what the fish felt like doing. As illustrated on the storyboard, we hoped they'd swim between Jake and the camera as he stepped back. Sometimes they did. Then again, sometimes they didn't. They are a whimsical, scary, capricious, lethargic, unpredictable and uncontrollable lot. Needless to say, we shot many takes.

One of the essentials of underwater shooting is communication. The problem is far simpler at Marineland than it would be in the open ocean. The tiny speaker in Jake's helmet permitted the director to talk directly to him from the surface. The observation windows behind the camera position allowed the director and the agency team to see every take almost as well as if we were on a sound stage. I used a grease pencil and slate to let him know how the takes looked to camera; he had chalk and a blackboard to make comments to me. When a more extensive dialogue was needed, we simply rose to the surface for the occasion.

We achieved the commercial several times over, in variations and with protection. The one chosen was close to the original concept outlined on the storyboard. Simplification and planning proved hard to beat.

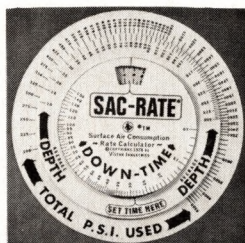
Between the close contact with the characters of the tank, the fun of working underwater and the stimulating interchanges with Marineland divers, it was a day not without its satisfactions and a commercial not without its uniqueness. I hope the results will inspire other ad men to combine their ingenuity with marine imagery. I hope more of them become aware of the compelling mystery of water: its colors, its movements and its creatures. The environment is a dramatic, vital and unforgettable stage, with a cast and setting that can never be duplicated in a Hollywood studio.



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**WHAT DOES IT DO?** In just seconds it easily computes a diver's aerobic efficiency (how well he breathes underwater) for different dive conditions. The Calculator translates dive factors into a single number representing a diver's underwater metabolic performance compared to that on the surface. A SAC-RATE\* number can be likened to the EPA mileage rating applied to new autos.

**WHY IS IT NEEDED?** To a diver, knowing his underwater breathing efficiency can be compared to a driver knowing his car's miles-per-gallon of gas rate; the diver who knows his SAC-RATE\* knows his underwater 'mileage' or performance capabilities. By noting his SAC-RATE\* after every dive, a pattern will develop enabling him to predict his down-time at various depths for any given dive condition. Lack of adherence to the diving rule, "Do everything underwater in slow motion", will show up as a higher than normal SAC-RATE\* for that dive and keynote the need for more efficient and relaxed diving. A SAC-RATE\* number is a sophisticated measurement of performance — much more meaningful than, "I can last an hour on a tankful of air".

**WHO NEEDS IT?** Every diver who wants to be aware of his performance, know his capabilities and make the most of his dive time: For the experienced diver, the Calculator can be used to predict down-time for various dive conditions, rate his skill and compare himself to other divers and insure an equal buddy match (how often has the experienced diver cut his dive short because his buddy ran out of air 10 minutes before he did?). For the student, it provides an ongoing record of improved diving skills and proficiency. For the instructor, it provides a measurement of his students' capabilities and learning curve and points out students requiring special attention. For the in-experienced diver, it provides a yardstick against which to compare his growing dive experience and maturity, and gives him or her a goal to aim for.

**TYPICAL SAC-RATES\*:** STUDENT... 40 — 60; BEGINNER (less than 10 dives) ... 30 — 40; ADVANCED BEGINNER (10 - 20 dives) ... 20 — 30; EXPERIENCED DIVER ... 15 — 20; PROFESSIONAL DIVER ... 8 — 12

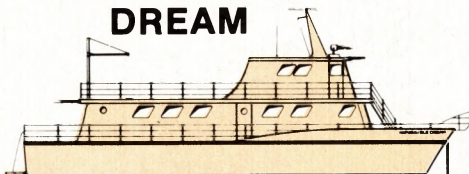
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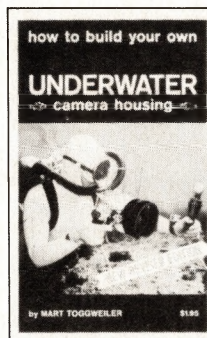
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# San Clemente

*continued from page 51*

be carefully avoided. Nautical charts show particular areas closed to the public and others are restricted during military maneuvers. At such times, vessels are notified by radio, patrol boat, or aircraft and must leave the vicinity at once.

Because of the distance and the local knowledge necessary to dive the best locations, the easiest way to enjoy San Clemente is on one of the many charter boats operating in Southern California. Most have galleys, compressors, and comfortable bunks. It's great fun to board in the evening, go to sleep (departure is usually around 2:00 a.m. depending on embarkation point), then wake up to dawn at San Clemente. For full information, contact area dive stores or charter boat services.

If you live in Southern California and haven't yet dived this unique island, you are missing a great natural wonder. With its clear water, plentiful wildlife, and exciting sightseeing, it ranks as one of the truly good diving areas. If you don't live in California, you may consider a visit to the fair state on your next vacation. After all, there are few places that in one breath can boast of Hollywood, Disneyland, and San Clemente, the slumbering giant.

## Lobster Study

From April, 1978, through March, 1979, Florida's spiny lobster will be the focus of an extensive research project by a team of marine research biologists.

At designated sites throughout the middle and upper Keys, about 20,000 lobsters of all sizes will be captured, measured and tagged with a yellow spaghetti tag inserted between the carapace and tail, and then released.

Divers who find any tagged lobsters, including shorts or egg-bearing females, should contact the biologists directly by using the toll-free number, 1-800-432-2873.

After the pertinent data has been recorded, all legal-sized lobsters will be returned to the diver. This data will provide important information for understanding the lobsters' migratory patterns and will ultimately benefit the entire lobster-fishing community.

Possession of shorts and females with eggs being transported to marine research stations has been permitted by the Florida Marine Patrol.



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## Key Largo Underwater Photography Services Expanding



The Florida Keys have always been a major recreational area for divers. The annual influx of divers has developed a large group of specialized and highly professional diving services throughout the Keys. This year, another facet was added to the service scene. Steve Frink moved to Key Largo with a new and very complete photographic establishment. "Steve Frink Photographic Services" offers 24-hour Ektachrome film processing, camera and housing rentals

and instructions, all under one roof. For information on the new service write Steve Frink Photographic Services, Mile Marker 102.5, P.O. Box 1907, Key Largo, Florida 33037 or call (305) 451-3737.

## Hall's Diving College Opened

Instructor candidates who are interested in the PDIC (Professional Diving Instructors College) system of instruction may now earn their certification at Hall's Diving College in Marathon, the Florida Keys.

The PDIC system, which was formulated by PDIC president Ed Brawley, stresses the instinctual reactions of humans to problem situations which upset their comfort or threaten their survival in the water.

The director of Hall's Diving College, Bob Brayman, earned his first instructor rating in 1963, and he founded Hall's Diving Center in 1973. Shortly after this he became involved with the PDIC program. Brayman is a licensed PDIC instructor trainer and is a Coast Guard licensed Ocean Operator.

To enter the program, candidates must be good divers, must be at least 20 years old, in good physical condition, must

sign a release/waiver, furnish a complete application form and supply at least two character references.

Hall's Diving College, 1688 Overseas Highway, Marathon, Florida Keys 33050, (305) 743-5929.

## Women In Diving

Since 1976, when the first all-women dive was held in Massachusetts, the Aquawomen Scuba Club has endeavored to promote the involvement in scuba. A conference, "Women In Diving", will be held in Boston on October 21, 1978. Also, the third annual all-women dive will take place August 6, 1978 at Cape Ann, Mass. For more information on these events contact Valerie Costello, c/o East Coast Divers, 213 Boylston St., Brookline, MA 02146. (617) 277-2216.

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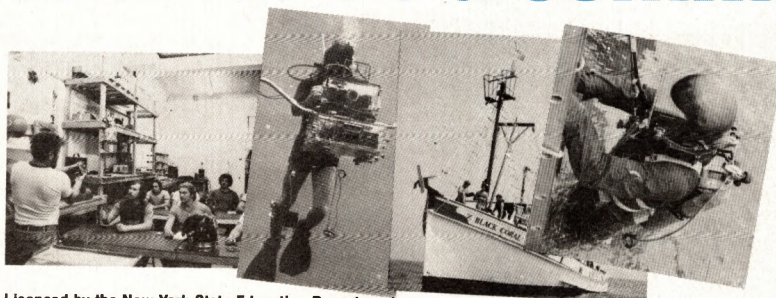
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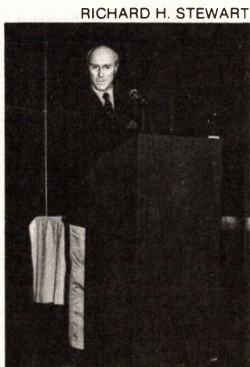
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# Spring/Summer EVENTS

## NAUI CANADA'S IQ

Stan Waterman hosts the film festival at NAUI's IQ-Canada.



RICHARD H. STEWART

The first international gathering of NAUI's Canadian affiliates was held at Toronto's Constellation Hotel April 21-23. The show attracted instructors and divers from all parts of the country, many from the northern United States. Attendance at the show was about 1200 persons plus a large, capacity crowd that viewed Stan Waterman's newest films Friday evening.

At the awards banquet Saturday night, Jim Willoughby received the NAUI Canada Medal for his years of service to the sport. Jim is an outstanding underwater photographer, has trained some 8,000 students and has devoted much of his time to teaching deaf persons to dive.

In addition to the awards and film show, many exhibitors were on hand with donated prizes which were given away by drawings throughout the weekend.



RICHARD H. STEWART

## YMCA 4th ANNUAL CONVENTION

The Hotel Deauville in Miami was the site of the YMCA's National Convention April 14-16. Featured speakers for the conference programs were Joe Strykowski, Rick Frehsee and



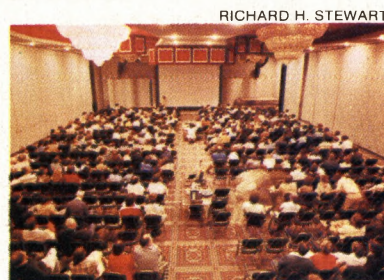
RICHARD H. STEWART

Paul Tzimoulis. In addition to the seminars, major manufacturers displayed their products from booths set up in the convention hall.

Rick Frehsee, Emcee

An exciting international underwater hockey match was played during the convention. A Canadian team from Vancouver, British Columbia, and a team from Chicago met in the Deauville pool from some fast and tough action. In this game, participants are allowed to use mask, fins and snorkel only and the advantage goes, naturally, to the players who can hold their breath longest. Although some of the subtleties of the game were lost to the spectators, who saw little besides a mass of thrashing bodies, the Canadians out-finessed the Americans, coming away with the victory.

Many of the conference participants stayed long enough to attend the YMCA springboard diving championships held immediately after the convention.



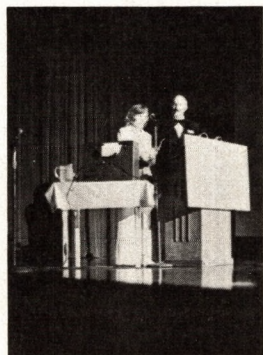
RICHARD H. STEWART

## OUR WORLD UNDERWATER

Our World Underwater, held each year in Chicago, again was host to divers from all over the United States May 5th through 7th. Seminars presented by such luminaries as Glen Egstrom, Tom Mount, Rick Frehsee, Jeanne Bear Sleeper, Dennis Graver, Robert Smith, Jack McKenney, Cap'n Don Stewart, Norine Rouse, Ken Hafner, Robert Marx and others highlighted the

proceedings on Saturday. The filmshow held that evening showcased the efforts of last year's Our World Scholarship recipient, Craig Cary, while presenting the films of Marx, Al Giddings and Stan Waterman. A special award was presented to Dr. Sylvia Earle for her scientific achievements. The recipient of this year's Our World Scholarship will be Steve Earley, of San Diego. Steve is an

excellent underwater photographer. His photograph of a green moray surrounded by cleaner shrimp was used as the cover of *Sport Diver's* Volume 2, First Quarter issue for 1978.



RICHARD H. STEWART

Dr. Sylvia Earle receives special award.



# HOLLYWOOD TREASURE HUNT

The south coast of Florida swarmed with treasure hunters June 4th as hundreds of divers showed up in Hollywood, Florida, to take advantage of the fantastic prizes being offered in the Diver's Unlimited Treasure Hunt. Organized by store owner Dave Inman, the hunt was held at Lloyd State Park, an oceanfront recreation area.

The divers were looking for large numbered washers which corresponded with the prizes donated by Diver's Unlimited and the various manufacturers. John Wroblewski won a Bahamas cruise from Adventure Cruises, Mike Grauman won a Scubapro stabilizing jacket, Don Verity won a Scubapro Pilot regulator, Gail Wilhelms won a U.S. Divers aluminum 80 tank, and David Miller won a Calypso regulator.

One of many prize winners claims his prize at Dave Inman's Divers Unlimited Treasure Hunt.



STEVE BLOUNT

"This is just part of our effort to entertain the people we've trained," said Dave Inman, "It's really a lot of work, but after seeing those prize winners and everybody after the dive, you know I'm going to do it again!"



KATHY BENTLEY



## TREASURE HUNT "78" CANADA

KATHY BENTLEY



Sub-Mariner's seventh annual Treasure Hunt was held June 10th and 11th at Presquile Provincial Park north of Toronto. As usual, the Saturday night banquet at the Legion Hall in Brighton held a capacity crowd, and after dinner, Brian Remington once again played DJ, spinning the platters til early Sunday morning.

Dive day is Sunday, and the crowd arrived none-too-early for the scheduled check-in and lunch. Several dozen tubs of hot dogs and cases of soft drinks later, everyone was suited up and ready to hit the cool waters of Lake Ontario.

After an unusually short search period, the crowd was back on shore, waiting for Joe Caputo to parcel out the

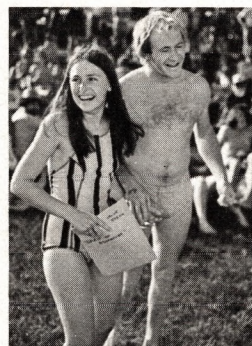
two-hundred-plus prizes to the anxious buddy teams.

When it was over, two newlyweds had won a trip on the *Spirit of Adventure* in Hawaii donated by Robert Wagner (Scuba Consultants) of Toronto, and there were happy divers headed for other trips to San Andreas, Colombia, and Small Hope Bay (donated by Dick and Rosy Birch).

Tanks, regulators, BCs, fins, masks, wetsuits; all passed off the "wish table" and into the waiting arms of successful divers. Dacor Corporation again donated a number of excellent prizes, as did other U.S. scuba manufacturers.

"Next year it'll be even bigger," promised Joe Caputo of Sub-Mariner's Diving Equipment Limited, sponsor of the event. "We've already got most of the prize donors signed up for more and bigger prizes; and I know at least 668 divers that are definitely coming back!"

At right, Glen Roberts points out the two Dacor aluminum 80's that now belong to a happy buddy team. The smiling couple in the middle were married a week before the Hunt and came away with a honeymoon vacation aboard the *Spirit of Adventure* in Hawaii. Don Switzer (far right) examines the weighted flags which entitled divers to a share of the prizes.



STEVE BLOUNT





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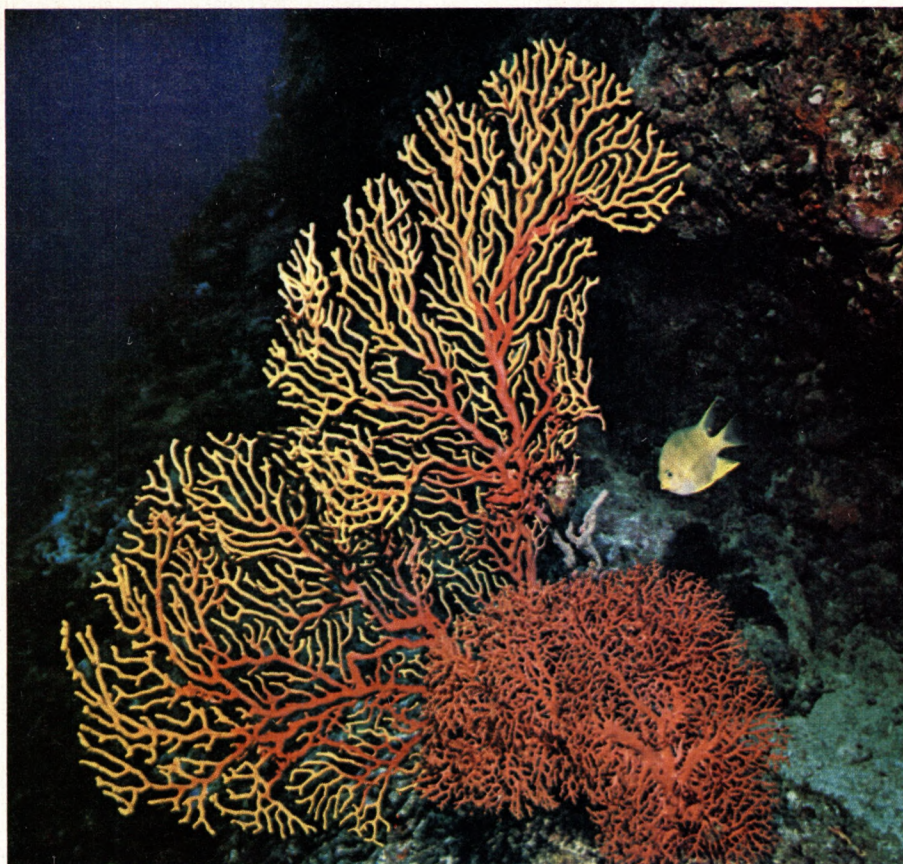
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*Craggy walls of lava rock surround a small lagoon at low tide. The pools left by the out-current often trap beautiful nudibranchs and other mollusks, like this doe cowrie (Cypraea vitellus).*





# **okima** **GALLERY**

STORY AND PHOTOGRAPHY BY BUD HIGDON





*These stalactites, found 35 feet underwater prove this wall was once dry, perhaps during the last Ice Age. Variations in the color of the mantle of this small tridacna clam are caused by bacteria and algae that grow on it. The plate of table coral (upper right) is a typical formation in many areas of the South Pacific, and may occasionally reach huge size. Oblivious to the intruding divers, a puffer fish rests on a coral ledge, while nearby a lionfish (lower right) spreads his spines in a colorful warning.*



April 1st, 1945: an Easter Sunday. It is still early, it is still dark. Strain an ear and, in addition to the soft "lap-lap-lap" sound of water gently caressing massive steel hulls, one can faintly detect the whispering of anxious men. In the air, a certain sense of urgency — with it, anticipation. Together they conspire to make time stand still.

Minutes drag by. In the east, night sheds her deep velvet shroud and folds it carefully in expectation of another day. Dawn's first light appears. In the dim grayness men, in battle dress, wait near gun turrets. And then — the wait is over.

Thunder rips the air as the opening chord in a steel symphony is struck. Moments later, another ship, in answer to the first, unleashes a second





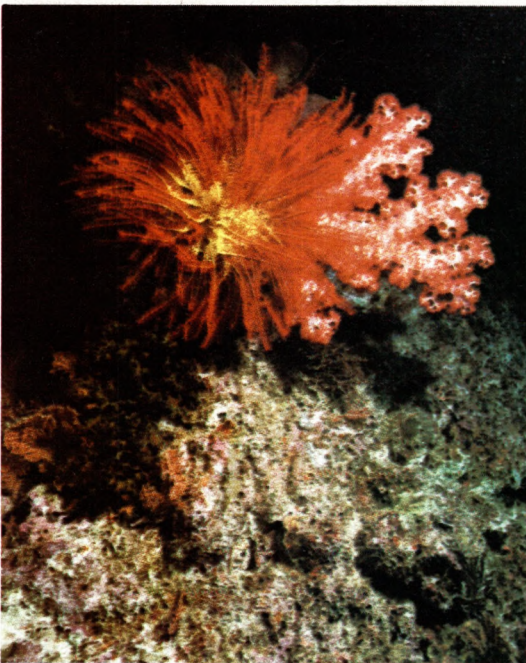
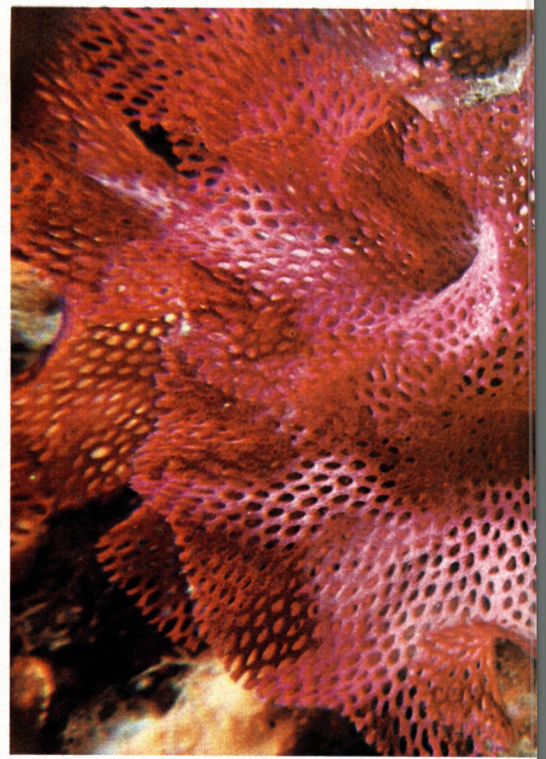
salvo. Others in the group pick up the beat. On and on it goes, lasting for hours until — quiet. The cannons, rockets, and mortars are silent. The only sounds are sergeants barking last-minute orders, and landing crafts, engines revving, as they turn toward shore.

Tense, uncertain minutes pass. Through the smoke and flames, binoculars reveal an American triumph — the landing at Okinawa. Those left aboard ship smile as each savors the success of the last 100 days of shelling; the success of the Typhoon of Steel.

Thirty-three years have passed. The men are gone now, their guns silent. The deadly battles which raged on Okinawa are memories. It was another time then; and today, it seems so long

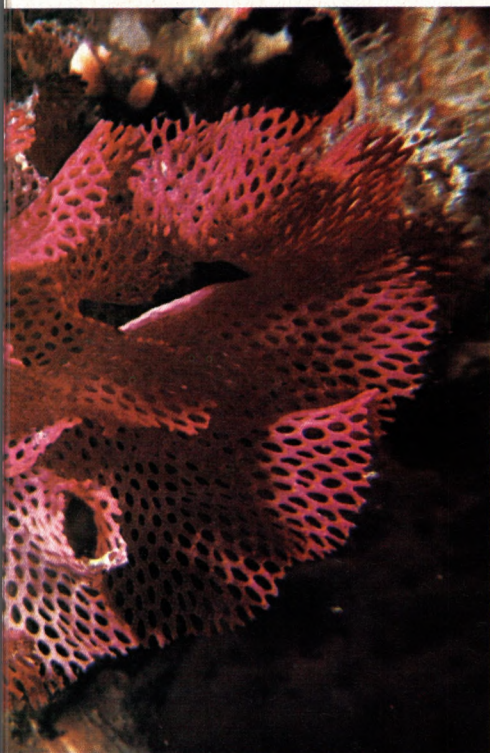






*The Japanese Kuroshio Current provides Okinawa's marine organisms with an abundance of nutrients. From the shallow tide pools of Maeda (left top) to the shallow and deep reefs, the island's sea life is as brightly hued as it is delicate. The bryozoan (top, middle) is commonly called lace coral and is found growing in crevices. The black and white sea snake (top right), a true serpent, is one of a family of venomous marine reptiles that inhabit the South Pacific. Brilliant crinoids (right and above) are common along the ledges and drop-offs around the island.*

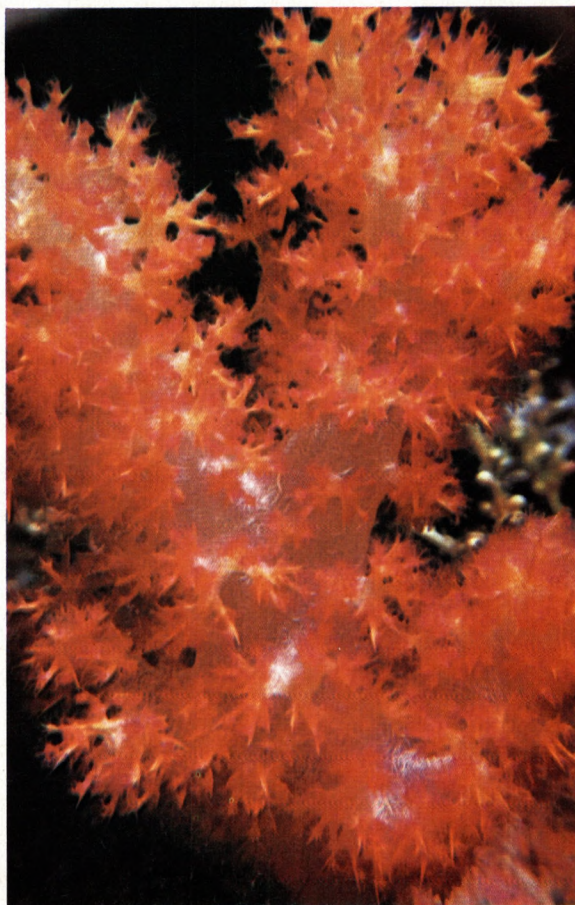




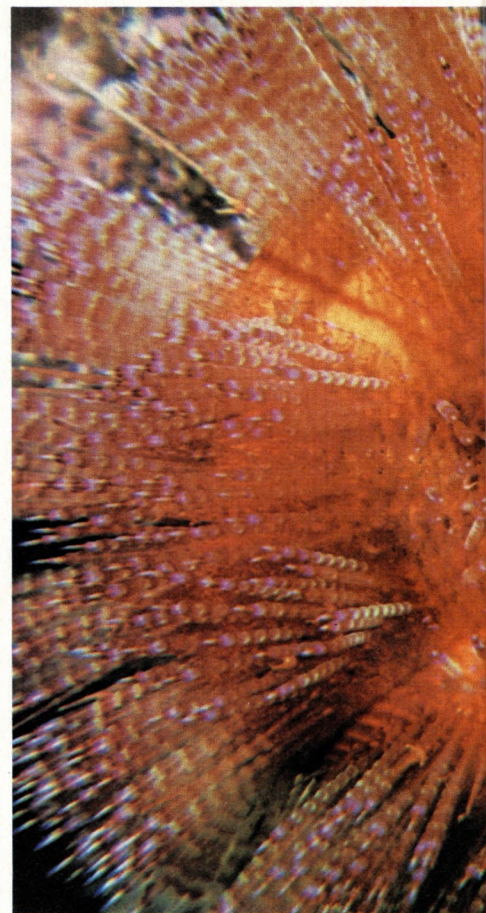
ago. Even so, the beauty that was Okinawa remains.

Okinawa is beautiful, but not in the usual "Paradise Lost" sense. Paradise would more than likely have broad, sweeping plains or at least one soaring mountain; Okinawa has neither. A good deal of Okinawa's beauty lies in its beaches and tide pools. There, at its beaches, wind and water have, for centuries, been hard at work sculpting shrines and statues of coral and lava rock. Nearby, tide pools promise the curious a chance to perhaps examine a rare and possibly valuable shell.

Part of an undersea mountain chain which extends from Japan to Taiwan, Okinawa is bounded on the east by the Pacific Ocean and on the west by the East China Sea. There it is surrounded by a barrier reef which has shallow in-shore waters. At the







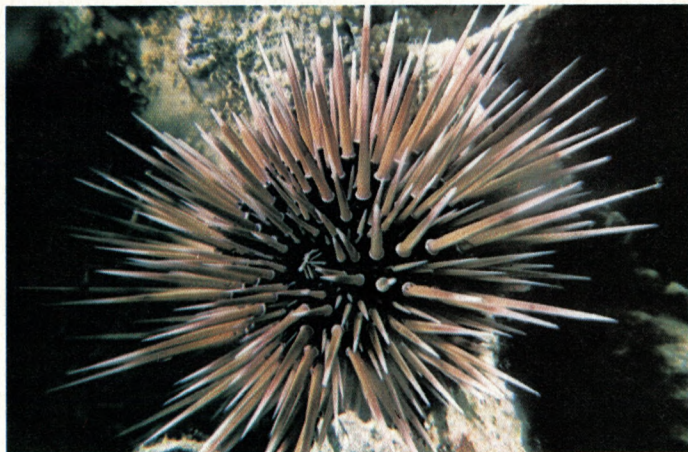
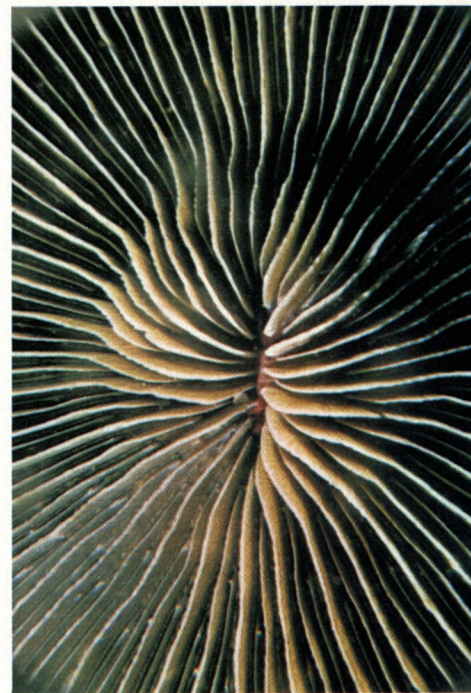
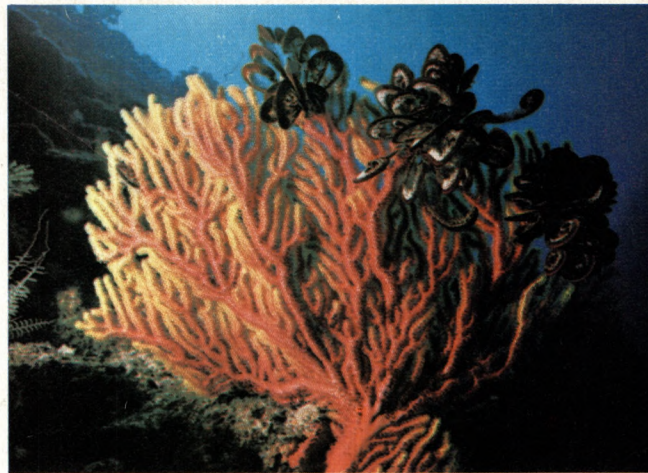
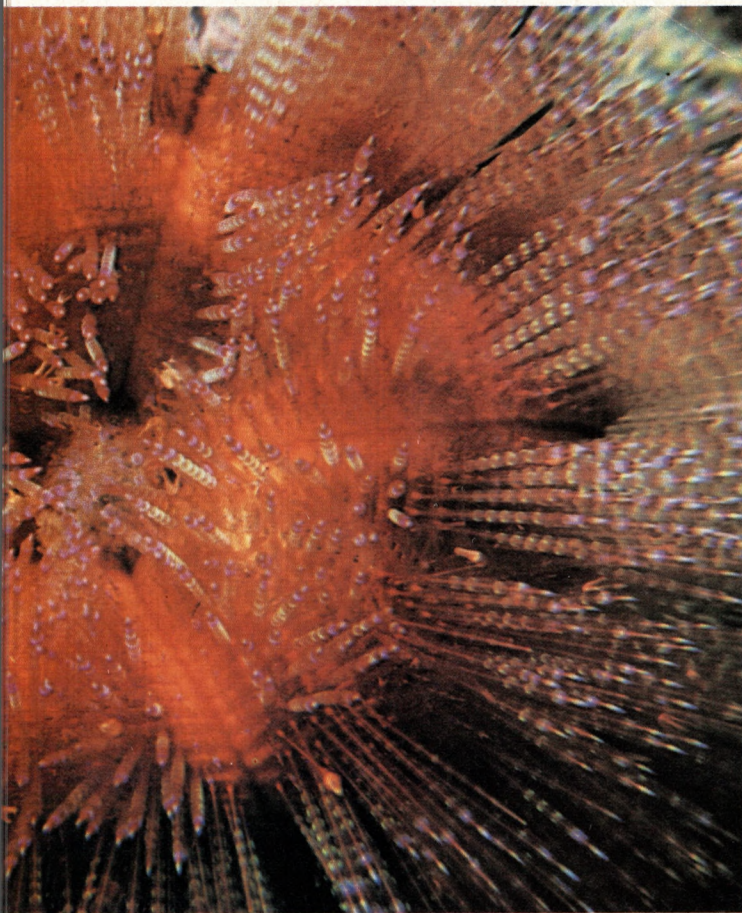
outer edge of the reef, deep waters drop sharply and reach an average depth of 130 feet. Nearby waters drop even more sharply, to nearly 25,000 feet — the depth of the Ryukyu Trench.

Flowing northward, up the China Sea side of Okinawa, is the Japanese, or Kuroshio current. Warm-watered, its stored heat energy helps maintain the island's temperate climate. An added benefit of the current is that it carries an abundance of food which, in turn, blesses Okinawa with a wide variety of marine life.

My dive group had planned a multi-purpose dive at one of Okinawa's beaches for some time, and today was the day. Our major goal was to

*continued on page 74*





*Intense light from the photographer's strobe reveals the true colors of the Spanish dancer nudibranch (top left), sea fan (top right) and small Chinese urchin (middle). The fine spines of this urchin are highly poisonous, and are much more painful than the larger spines of the more common urchin (middle left). Mushroom coral (above) is found in lengths of up to two feet around Okinawa. Author's wife, Sam (far left), searches shallow algae for rare and unusual shells.*



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## WASHINGTON CURRENTS

### No Wreck Ban: McKinney

The Federal government isn't going to stop sport wreck diving, says Charles M. McKinney, manager of the U.S. Interior Department's Federal Antiquities Program.

And, despite reports to the contrary, he says for-profit treasure salvors aren't going to be run out of business.

These key points were spelled out in a June 16th Open Forum at the University of Maryland's College Park Campus. The Forum was sponsored by the Atlantis Rangers, the most active wreck diving group in the East.

It wasn't easy to face the Rangers, some of whom believed McKinney posed a serious threat to the organization. And it was even harder to take on the group of treasure hunters, archaeologists, and academics who came to spar over Interior's plans to preserve the historic underwater sites.

Any plan to place all wrecks in U.S. waters off-limits to the diver would be unfair (if not unconstitutional), McKinney said.

"I wouldn't have anything to do with such a program."

McKinney drew a big distinction between sport divers and professional treasure hunters.

"Their motives aren't the same. Treasure hunters are in it strictly for profit."

There's another difference: sport divers don't destroy wreck sites. Often as not their finds are donated to university and maritime museums.

An archaeologist who spent two years diving for artifacts off the coast of Africa, McKinney has taken a beating in print. That's because his proposal to place historic wrecks on the Outer Continental Shelf (OCS) under Federal Jurisdiction is a

complex and confusing piece of business.

To some, it smacks of Big Brother.

Even the unreconstructed James J. Kilpatrick took a swipe at Big Brother, real or imagined. In two editorials the conservative Kilpatrick gushed an uncharacteristic admiration for treasure hunters. He said nothing about the profit-taking or the total destruction of historic sites. He did say, however, that Mel Fisher, president of Treasure Salvors, Inc., was the greatest hero since Robin Hood.

Naive editorials aside, it must be said that McKinney shares some of the blame for the confusion which surrounds the so-called wreck ban controversy. McKinney isn't an orator and at times he has had difficulty expressing his ideas clearly.

But if one takes the time to navigate the jargon of Washington and the politics of the treasure hunters a very interesting and thoughtful proposal emerges. Here are some of its key elements:

\*McKinney states without qualification that sport wreck diving won't be banned. *Period!*

\*Treasure salvors who in recent months have blatantly manipulated the anger of sport divers against McKinney, will not be put out of business. If anything, they stand to profit even more.

\*Archaeologists, historians and scientist will continue to work sites on the OCS without a Federal hassle. Interior is ready, in fact, to provide logistical support to anyone seriously engaged in documenting historic sites.

\*Private investment in profit-oriented treasure hunting — the main ingredient in the romantic treasure game — will continue as it always has. Mel Fisher reportedly has substantial



investors in Washington and the IRS isn't going to give any heat. But artifacts are to be turned over to the government or some other group for study. Later, most of the loot will be returned to the finders who may sell it on the open market and seek further investments. Interior wants data — not antiques.

\*A sunken object of antiquity will be defined as an artifact, shipwreck, armament or vessel which is 50 years old or older. Traditionally, an antique must be at least a century old. The lower figure will take into account historic sites in the west which otherwise might be wiped out — for a profit, of course.

\*The Antiquities Act of 1906 will continue to apply to all historic sites, on land or underwater.

\*To meet the criteria of "historical importance" for purposes of federal protection, a site must be thoroughly evaluated and later nominated to the *National Register of Historic Places*, a sort of official log maintained by the Federal government. The *Register* outlines the specific test of importance.

\*To qualify for nomination, an antiquity or site must have what McKinney calls "high potential for significant data." This would automatically exclude most modern metal wrecks commonly found in coastal waters. Volumes of information about these vessels are now on file. But 16th and 17th century vessels are considered possible high yield sources of data.

\*Sites would be logged individually in the *Register*, and the process would be a slow one. The government now has a list of about 3000 historic underwater sites up for nomination, including submerged terrestrial sites in the Gulf of Mexico. Very few have been evaluated and logged in the *Register*.

\*There will be no sweeping declaration placing the OCS off-limits. This is unrealistic and Interior knows it. What the agency is saying is that it reserves the right to declare a site off-limits if its importance is obvious. It was for this reason that the *Monitor*, discovered recently off the coast of North Carolina, was put out of reach of those who would rape it for private gain.

\*Congress will be asked to amend the antiquities laws so that "cultural resources" on the OCS may

be claimed in much the same way mineral rights have been made government territory. Private interests may lease underwater land for oil and mineral exploration, and treasure hunters also will receive permission to work cultural sites they find. But they won't be allowed to sail away without giving us a glimpse of what they dig up.

\*The Secretary of the Interior will receive new powers to declare that a given site should be protected from exploitation. No one knows for sure how many sites have been ripped off — but the frequency appears to be alarming enough to cause Interior to act. Once a site is destroyed, its true value is lost forever.

McKinney isn't trying to exclude anyone in pursuit of underwater history. He's trying to put together what he calls a "people's program" to share in the discovery. Next summer he'll meet with treasure salvors, archaeologists, academics and sport divers in an attempt to combine their talents. This appears to be a sensible and fair approach.

Protection of cultural resources is an issue we can't avoid. Many states already have taken the initiative. Florida insists that a state archaeologist document all treasure hunting ventures. Virginia recently declared portions of the George River off limits. Maryland is forming a cooperative search and recovery venture which has similarities to the McKinney plan (see item elsewhere in this column).

Opponents of any form of cooperative oversight are entrenched. They argue that Federal or even state jurisdiction is a form of overt intervention. The logic is that, if an individual or group of investors puts up money and time they have purchased absolute right to do anything they want to do with their find. The logic seems to have much currency in other publications in the sport diving field. Obviously, some writers have been frothing at their typewriters. Still, they have presented some strong copy.

We believe all sides require very careful analysis. We're sport divers; we aren't necessarily in business for a buck. To us, cultural resources on the OCS are every bit as important as mineral deposits.

In our own best interest let's stop shouting and start thinking.

Otherwise, we'll be the ultimate losers.

### NOAA In Trouble

Plagued by continuing lackluster leadership, the National Oceanographic and Atmospheric Administration (NOAA) may be in a fight for its life.

This comes as no surprise. Over the years NOAA has earned a well-deserved reputation for obscurity, despite many worthwhile programs working at the staff level. Mention NOAA and most folks look for the ark.

The White House is looking, too, which is why it is now contemplating a top-to-bottom restructuring of the agency.

Sources here say NOAA may go the way of the old Atomic Energy Commission — split and dismembered, with various portions slotted into other agencies. It's now under the Commerce Department and its personnel roles are among the heaviest in Washington.

What are those 17,000 NOAA people doing with their \$800 million annual budget? That's what Jimmy Carter wants to know. He also wants to know if there's a better way to spend it.

This doesn't mean the Administration wants out of the oceans business. Such a move would be as politically suicidal as an end to Social Security. What the Carter people want is a more visible oceans program — and if it's one thing NOAA has failed to be, it is visible. Here's an example:

Not long ago Richard A. Frank, NOAA chief, earned a NAUI card. He put out a statement when asked to do so by this magazine, and that was fine. But it remained for his wife to grab the big headlines by quitting her White House job so she could be at home with her children. When the "libbers" heard about it, Jane Frank got a frontal blast. But her husband, "Richard who?" didn't even make a subheadline.

This isn't much in itself, but it typifies the NOAA non-image. It's that big, blank non-image that started all the trouble in the first place.

Inside sources acknowledge the troubles. But, like so many in the agency, they feel powerless to change things. They dislike the restructuring plan, claiming it's being studied to

*continued on page 143*



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continued from page 70

find and photograph live shells with the animal visible in its natural habitat. Secondly, we wished to do the same with another member of the mollusk family, the nudibranch.

We suited up and began the walk across the top of the reef. As we walked, we looked carefully into each tide pool. Close observation revealed several species of cowries, cones, and a number of other shell species. Also in the pools were reef fish who, at times, would receive some stiff competition from the bright colors on a nudibranch.

The reef we selected was narrow, and quite close; just a hundred yards from shore. Arriving, we descended a few feet and made a last-minute check on the camera housings. Finding everything as it should be, we dropped gently down to 130 feet and settled on the sandy bottom.

Almost instantly one of those rare moments in a diver's life occurred. One of the women in the group turned and saw a large, black animal coming straight for her. A closer look revealed it to be one of the most graceful of all sea creatures, a young manta ray. This one was about six feet wide, black with white spots. On its underside, a pair of remoras hung on.

The ray, with its broad fins rippling, flew up to within a few feet of the diver, stopped, looked at her for a brief moment then, moved casually away. The incident was so dream-like that the diver still wonders if it really happened. She said later she wanted to reach out and touch the ray but didn't want to scare the creature. When the excitement was over, we split into teams and settled to our task.

I was looking specifically for a *Cypraea Martini*, more commonly known as a martini cowrie. This particular cowrie is rarely found alive and none have ever been photographed alive with the animal itself visible. Unfortunately, this was not the day to find one. During the dive however, many fine shells were found and photographed. Among them were cowries *cernica*, *beckii*, *nucleus*, *talpa* and *tigeris*. We also found the rare cones *pertusis* and *malacansis*, and an impressive red and white bi-valve, the *pecten superba*.

As time ran out, we began our ascent up the reef face, stopping along the way to photograph a rare *murex saulae*, several small black coral growths, and a myriad of other sealife. By the time we surfaced, we were out of film.

continued on page 79

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# THE NUBBLE LIGHT CONTROVERSY

**Story and Photography by  
Fred Bavendam**



Nubble Light is a picturesque lighthouse situated on a small island just off York, Maine. Constructed to warn mariners away from rocky shoals, the Light has become a warning symbol to divers — warning us that abuse of privilege by divers and overzealous regulatory officials can lead to restrictions on the right of public access to the ocean.

The lighthouse is a well known New England landmark that attracts large numbers of sightseers each summer. A narrow channel separates the island from a small parking lot and the few hundred yards of shoreline that constitute Sohier Park. The park was donated to the town of York Beach with the stipulation that it be used as a public recreation area.





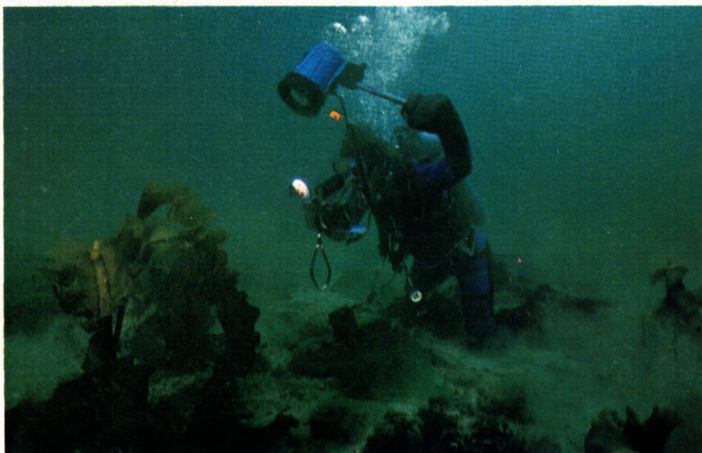
As diving became more popular, Nubble Light attracted an ever larger number of divers. From the shore, a gradually sloping ledge allows easy entrance or exit, and drops down to 15 feet within 10 yards of shore. The island blocks most of the wave action, and while the shallowest part of the channel may be exposed at low tide, 25 yards from entry the depth is an ideal 40 feet.

Nubble offers much more than an easy entry. The bottom terrain is variable, with areas of rock and kelp, a broad sandy stretch and caves and overhangs literally covered by mussels, sea stars and anemones. The marine life is typical of New England: Sculpins, sea ravens, cunner and flounder are almost always there. Visitors include ocean pout, wolf fish, skates and pollack. The invertebrate population runs the gamut from sea stars, cucumbers, urchins and nudibranchs to the occasional jellyfish.

Clubs from as far away as Quebec and New Jersey traveled to Nubble to dive. As the number of divers increased, so did the ire of businesses adjacent to the Sohier Park. The gift shop owner and restaurant manager complained



*The number and variety of sea creatures in the channel at Nubble Light have increased dramatically since the permit system was implemented. The yellow sea raven, short-horned sculpin and hermit crab (opposite page) share these cold waters with numerous species of invertebrates including anemones and nudibranchs.*

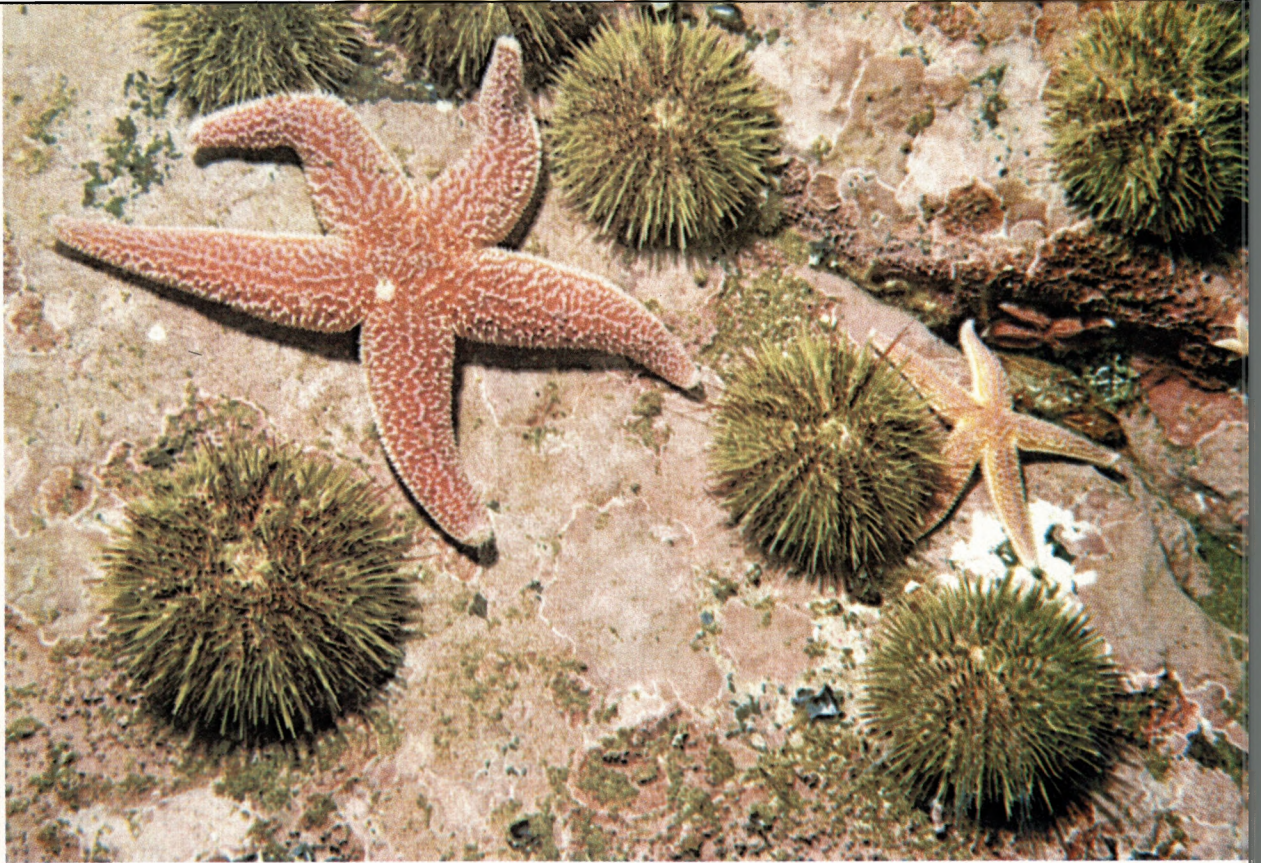


that divers congested the limited parking area, cutting off the flow of tourists on whom their businesses depended. Nearby residents objected to the noise of the compressors that divers brought in, especially when they were used late at night. Still, an uneasy coexistence prevailed. Coexistence ended in April, 1974.

One warm spring weekend, too many divers came to Nubble. On Saturday, 80 members of a Canadian dive club arrived, dove and camped overnight. Throughout the night, the compressors pounded. On Sunday morning, a local dive group from Rye, N.H., the Brass Monkeys, arrived for an ecology clean-up dive they had arranged with town officials. Within a few hours, more dive clubs and several groups of instructors with students showed up. All of these groups, acting independently, had converged on Nubble Light. Over 300 divers, their gear and vehicles jammed the small parking lot, overflowing into and blocking the access road for quite a distance. When the police arrived and asked that illegally parked cars be moved, angry divers reacted with hostile words. Finally, the businesses had the incident they







*These sea stars (top and middle) prey on urchins. Often, large groups of stars may be seen mauling a single urchin. The lobster (above) is still the most valuable product of the Maine fishing industry.*

needed to force official action.

At the ensuing town meeting the commercial interests asked for an ordinance prohibiting all diving at Nubble Light. Diving instructors and clubs argued that Nubble offered greater safety to instructors with novices than any other local site. Caught between the demands of their constituents and the concern for safety, town officials struck a compromise. Diving at Nubble would be limited by a mandatory permit system.

Under the system, the diver must buy a permit to snorkel or scuba dive. Worse, even permit holders are barred from Nubble on Sundays and holidays from April through October. For the individual diver, a non-transferable pass costs \$25. An instructor can purchase a group permit for up to 15 divers for \$125. Permits must be renewed each year for the same fee. To date, only two instructional groups and a handful of local divers have bought passes in any year. The commercial interests have prevailed and Nubble Light is effectively closed, especially to divers who live farther away and can make the trip only a few times each year.

*continued on page 82*



continued from page 74

My partner prepared for another dive. During our surface interval, we searched the tide pools and allowed the warm sun to work on our tans. While time crawled by, we hand fed fish some crushed sea urchins and watched the smaller fish dart in and out among their larger competitors to get a share of the feast.

Had we known what was going to happen on our next dive, we would have shortened our surface interval considerably. How could we have known that we would go no deeper than 20 feet? We had planned a second deep dive, and waited what seemed a lifetime. Finally we were ready; grabbed our cameras and started the walk back across the reef. Once again, we performed a last-minute check on the cases, and began our descent into the blue-green water.

As we approached the 20 foot mark my partner motioned. In front of him was a large octopus, its head about 12 inches in diameter. We moved in closer, and it moved slowly away. Its behavior was not the usual hurried flight to hide beneath the nearest rock. Instead, it led us about 10 yards across the top of the reef. There, a second, larger octopus was entrenched in a hole, guarding a nest of eggs. The one in the hole could not be coaxed, or pulled out. Amazing as this was, what happened next was absolutely astounding. For 25 minutes the octopus that led us to the nest allowed us to touch, stroke, and hold it. During this time, it changed colors constantly, from a solid, deep brown to slate white, changing again, until finally it donned a coat of mottled red and white. It would stand up on its legs and watch as we approached, move slowly away, then stop and wait until we were able to catch up and hold a tentacle or scratch it between the eyes. All this time, our strobes were going off practically non-stop.

At the end of the 25 minutes, we had finished our rolls (oh, to have a camera with an endless supply of film). Knowing the rest of the dive would be anti-climactic, we surfaced and went ashore. Looking back, the whole episode seemed like a story which we would not have believed, had we heard someone else tell it.

I have been diving Okinawa for nine years and have had many encounters with rare and curious sea creatures. Some live on the shallow in-shore reefs, some along the spectacular drop-offs, while others have found homes among the coral-encrusted souvenirs of this peaceful island's violent past.

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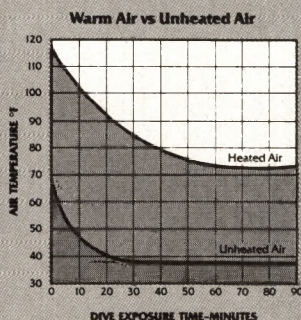
From **COLD WATER AND THE DIVER** by Dennis Graver, *Skin Diver Magazine*, February, 1978.

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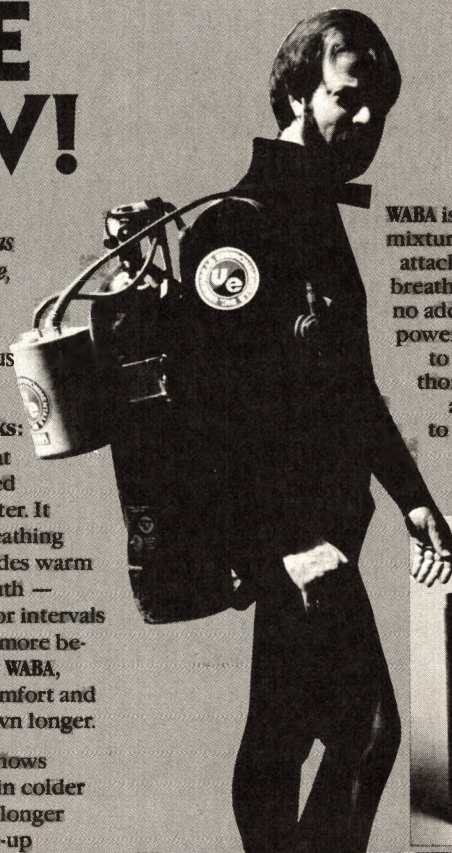
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VOL. 1 NO. 1



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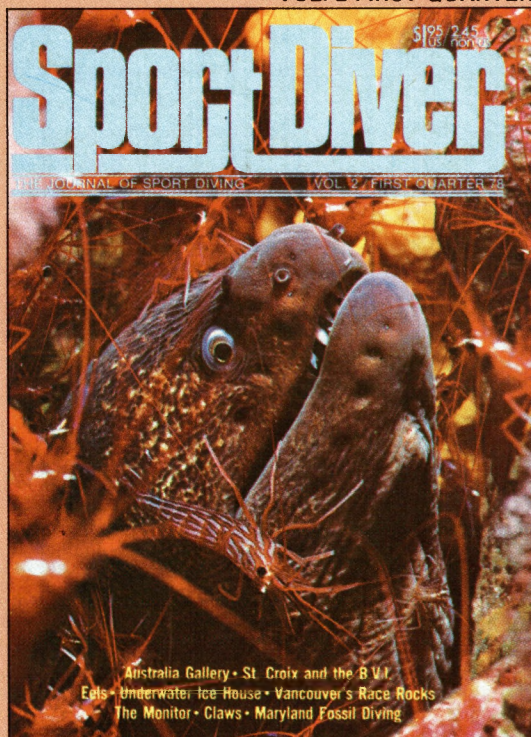
the same tired old dive sites, our readers got an eyeful from places like Haiti, the Philippines, Cuba, Australia and Scotland. And *Sport Diver* covers North America like no other magazine



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## THE NUBBLE LIGHT CONTROVERSY

continued from page 78

The restrictions have been challenged. Three members of the Brass Monkeys, Rachael Wayman, Wayne McNicholas, and Joseph Arnstein filed a suit against the Town of York Corporation, charging York with unlawful discrimination in restriction of access to a public park. Their suit was denied by a superior court judge who ruled the importance of the precedent it would set should be decided by the state supreme court.

In September of 1977 both sides reargued their case before the Supreme Court of Maine. In his arguments, the attorney for York described divers as gypsies, and placed them in a category of undesirables that included pool halls, prostitutes and unleashed dogs.

As of June, 1978 the court had not rendered a decision. Meanwhile, the legal cost for the divers had mounted to over \$3,000. Although a dive club in Bangor, Maine and the Bay State Council of Divers of Massachusetts have made contributions, most of the financial burden has been born by the plaintiffs and the Brass Monkeys dive club.

Until this case is settled, the possibility exists that, at least for divers in Maine, municipalities may have the power to restrict access to public recreation areas. If the action at Nubble Light is upheld, it may inspire similar legislation affecting popular dive sites in other states and set a dangerous precedent of official regulation of water sports enthusiasts.

The town of York was seeking a legitimate solution to a very real problem. The dive club has both positive and negative aspects. It brings divers together for companionship and safety, but the numbers of divers it concentrates in one area can lead to opposition and restriction if the divers are not careful to respect the interests and rights of others.

The town was not wrong in seeking to ameliorate a very irritating situation, but it took the wrong, and hopefully, an illegal approach. The ultimate solution to the controversy at Nubble Light and other similar disputes is mutual respect and courtesy by all the parties involved. Officials must realize that public areas are for the use of the public, including scuba divers, and the divers must

recognize that they are not the only public to whom access is guaranteed. A healthy concern for the rights of other ocean lovers would undoubtedly go a long way towards softening local attitudes towards visiting divers.

### IQ-10 Slated

continued from page 10

a mini-series of his films in the Disneyland Convention Center Grand Ballroom.

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### DIVERS

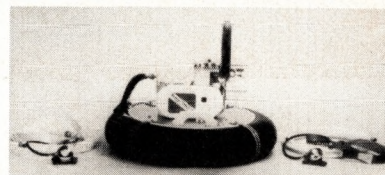
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# SPONGES

## SEACOLOGY

Text and Photos by Bob Wallace

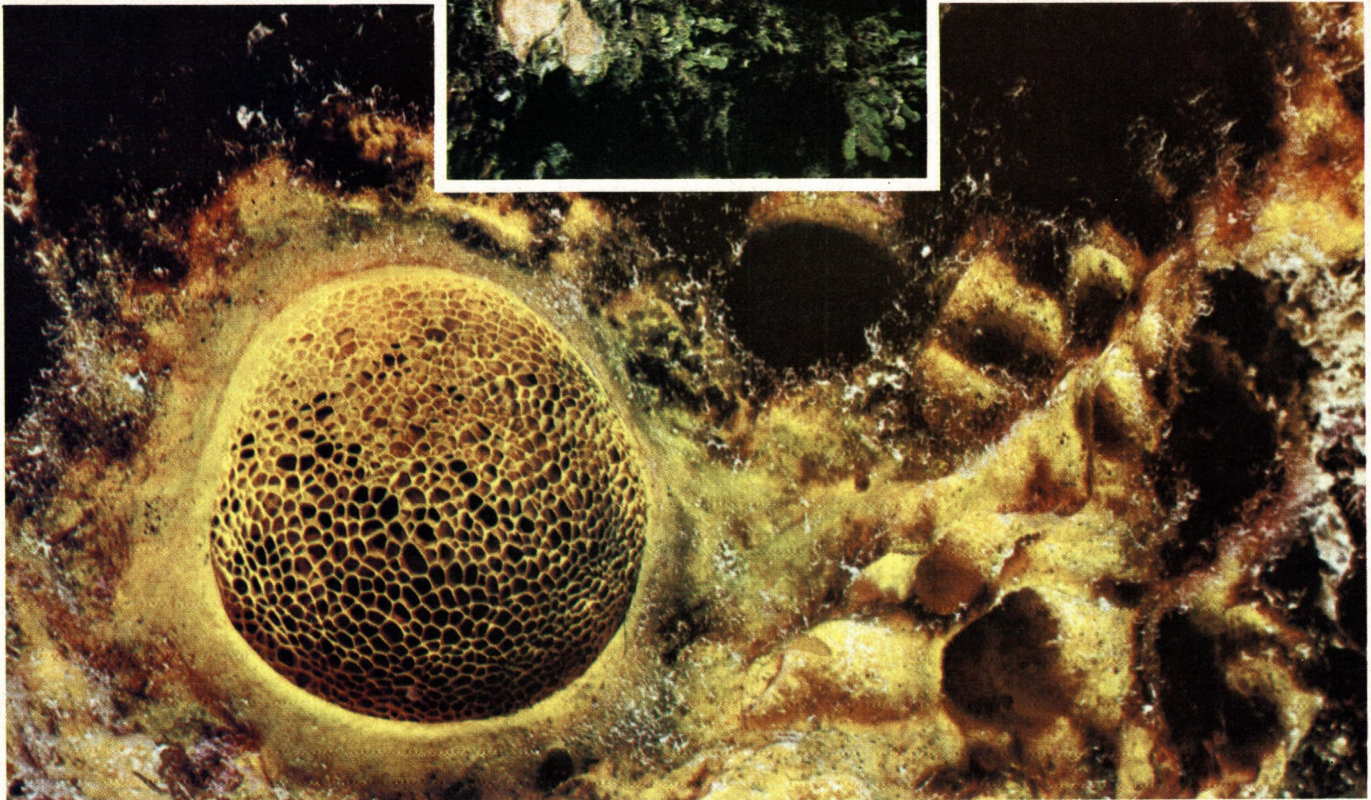
Sponge life, as old as the Paleozoic, (500 million years), still thrives from the intertidal zones to the abyssal depths and ranges from Arctic to tropical seas. A few species (Family-Spongillidae) live in fresh water lakes and rivers.

Little is known about the age of sponges. Some of the largest deep water specimens may have lived for hundreds of years, while others may live for only a year or less.

Although some species of sponge survive seemingly

hostile conditions, when removed from their natural environment, they soon die. Shortly after dying their brilliant colors disappear. Amazingly, some species of sponge have been dredged from depths as great as 8,000 meters (26,000 feet) where there is little or no light and minimum current flow.

Dr. Shirley Pomponi, who assisted me on a sponge article for **Sea Frontiers Magazine**, is a research associate at the University of Miami's Rosenstiel School of Marine and





# SPONGES

Atmospheric Science. Recently, her research on sponges has focused on the mechanism of boring by sponges into living and dead coral skeletons.

In temperate seas, excavating sponges of the genus *Cliona* bore into the shells of clams and oysters. The bi-valves are unable to replace the protective shell layers fast enough and soon become unprotected and die. Thus, the excavating sponges are a major problem in clam and oyster beds. Boring sponges are not completely harmful to the



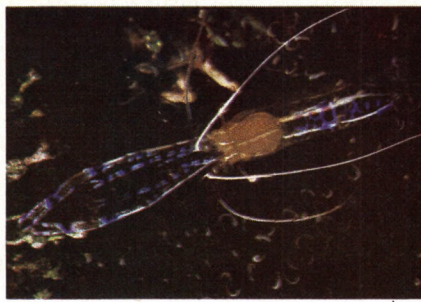
Although sponges are an integral part of the reef ecosystem, they have not been extensively studied. The oscule, or opening in the sponge (below), facilitates respiration of water through the sponge tissue.







The lettuce nudibranch (top center) and shrimp (below) are two of the small reef creatures which hide in sponge oscules. Some small creatures are born and live their entire life cycle inside of the sponge's complex canal system.



reef environment, however. They contribute an enormous amount of sediment and provide substrate in the form of coral rubble for new coral growth and other invertebrate populations.

The sponge's food, such as algae, bacteria and organic detritus, is passed through a succession of canals permitting only the smallest particles to be utilized by the collar cells (choanocytes). The whip-like flagella (tail) of the collar cells account for the movement of water through the sponge body. Food particles are passed from choanocytes to amoebocytes, which digest the food and distribute the nutrients to other cells.

The prolific distribution of



# SPONGES

the animal  
kingdom's simplest  
creatures . . .

sponges in a coral reef environment is perhaps partially due to the number of methods by which they reproduce. Reproduction can be either sexual or asexual. Sexual reproduction takes place when surrounding conditions are favorable inside the sponge. When both the egg and sperm cells form in a single species, it usually occurs at different times. Some species of sponge have separate sexes, as in humans.

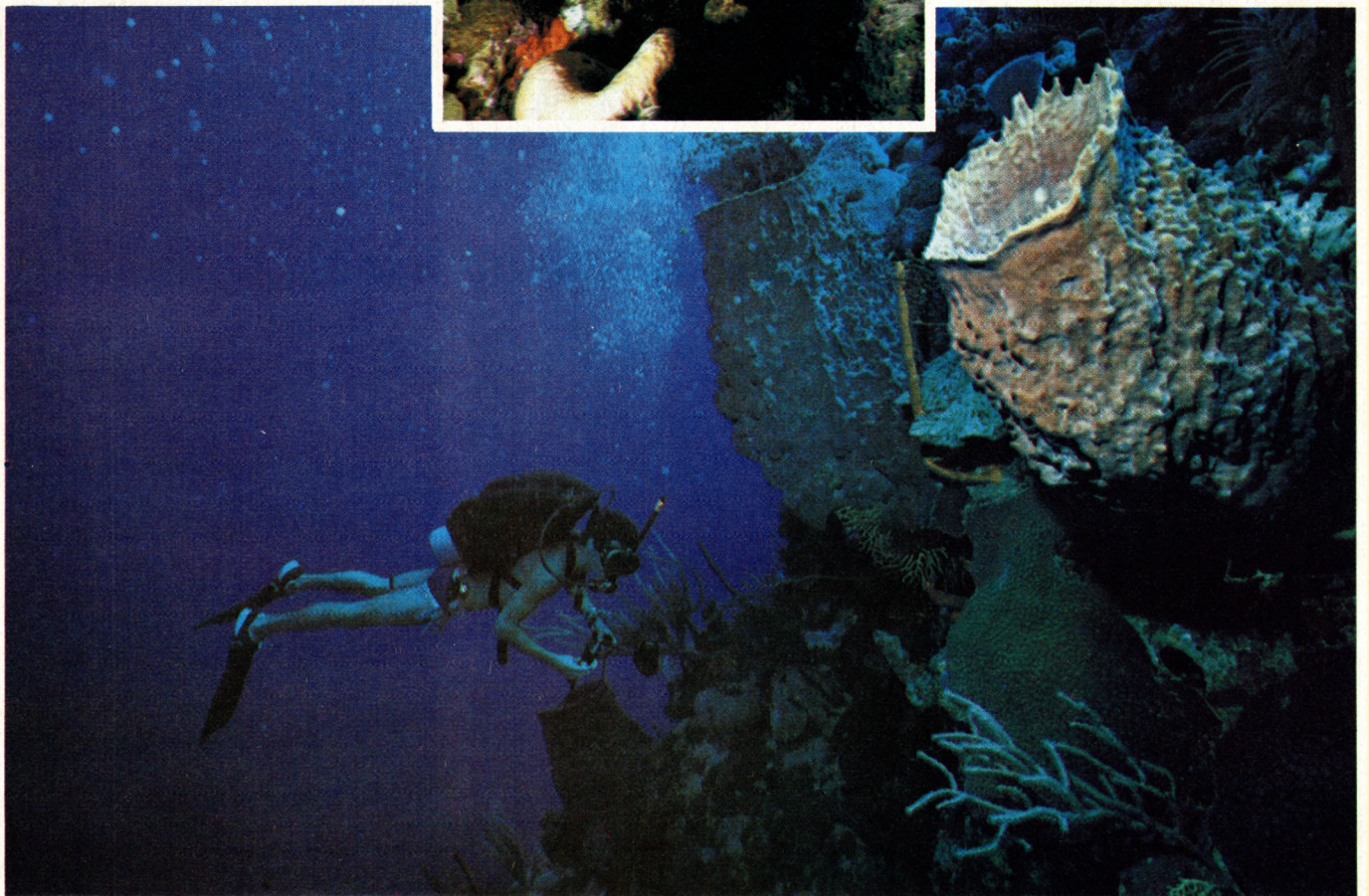
Cross-fertilization is the most common method of reproduction in the animal kingdom. The sperm from only one sponge is carried to the

egg of another by the same current of water that brings food and oxygen to the cells.

Also capable of asexual reproduction, the sponge can produce from gemmules. A gemmule is formed when many of the special cells (archaeocytes) filled with food, become surrounded by other cells (amoebocytes) that deposit a hard covering.

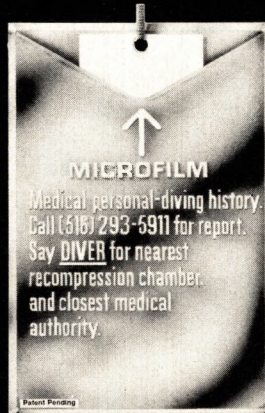
Larger sponges may develop branches which become independent of the parent sponge, forming their own water canal system. These branches may break off in a storm or strong current and, if

*continued on page 114*





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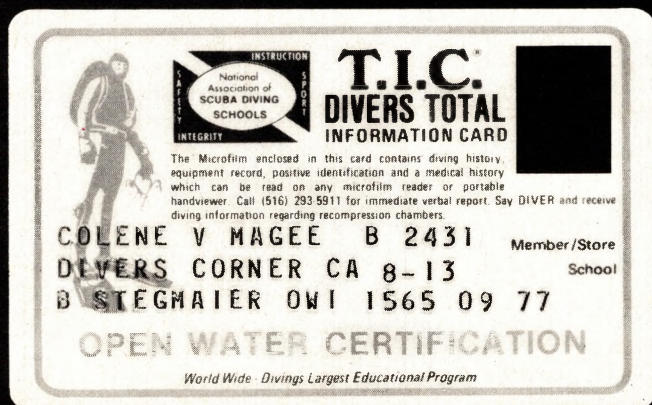


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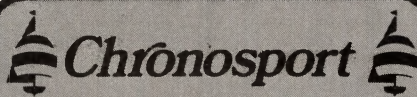
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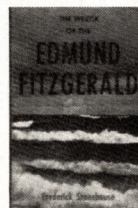
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# REVIEWS

By Steve Blount



### The Wreck of the Edmund Fitzgerald

Frederic Stonehouse; Avery Color Studios; 1977; Softbound; 190 pages

The mysterious sinking of the 729-foot ore carrier *S. S. Edmund Fitzgerald* on November 10, 1975 generated a major controversy over the Coast Guard regulations governing Great Lakes freighters and a Top 40 record hit for songwriter Gordon Lightfoot.

During a heavy November storm on Lake Superior, the *Fitzgerald* disappeared with her captain and crew of 28. No distress call was received either by the Coast Guard or the *S. S. Arthur M. Anderson*, which had been tracking the *Fitzgerald*. The loss was sudden, unexpected and deeply shook the Great Lakes maritime community.

Frederick Stonehouse's book advances several theories for the sinking of the *Fitzgerald* and offers an overview of the causes of Great Lakes shipwrecks. The book is well written and imminently readable.



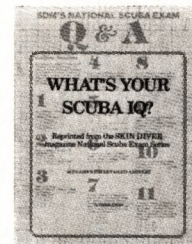
### PADI Dive Manual

Dennis Graver; PADI; 1978; Softbound

The new PADI Dive Manual and Instructors Guide are part of the all-new PADI scuba course. The purposes of the course are to streamline, condense and provide more fun in diver training while offering flexibility to the instructor.

The new course materials include the Dive Manual, Instructors Guide, Study Guide, Simplified Dive Tables, large Dive Tables Chart, Standard Quizzes and Exams, and audio-visual presentations.

The Manual is thorough and well-written, taking the new student easily along the road from skin diving to underwater specialties.



### What's Your Scuba IQ?

Dennis Graver; Divepubs; 1978; Softbound; 80 pages; \$3.95

Dennis Graver has been writing *Skin Diver Magazine's* National Scuba Exams since their inception. This book is a reprint of 40 of those exams designed to probe the knowledge of all levels of diver, from basic to master.

The quiz-and-answer format is a quick and sure way to keep up with those easily-forgotten facts that make diving safer and more enjoyable. If you're not 100 per cent sure exactly what altitude you should institute altitude diving procedures, or how much energy you'll need to double your speed in the water, check our *Scuba IQ*. Available by mail from Divepubs, 511F W. Alton Ave., Santa Ana, CA 92707.



### Come Scuba-Do With Me

George Nowak — *The Barefoot Man*; Barefoot Records; 1978; \$8.50

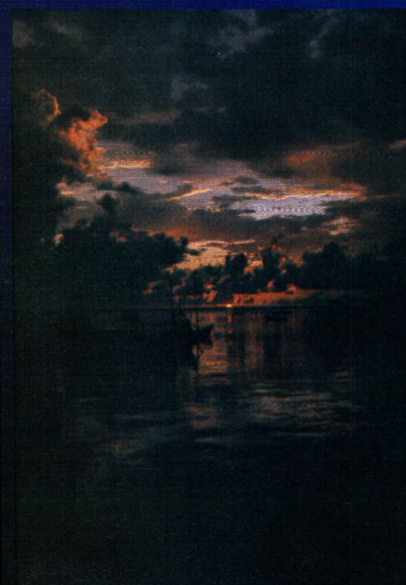
The Barefoot Man has been entertaining divers in Grand Cayman for years, so for his eighth album he's cut a real novelty collection especially for divers. The selections, recorded in stereo in the U.S. and Cayman, include: Barracuda, It's a Moray, Come Scuba-Do and other like-minded tunes.

Barefoot's back-up musicians make the most of his sunny melodies and the recording is excellent. His intent is humorous and the effect on divers is always spontaneous. The album is only available by mail from Barefoot Records, Box 1294, Grand Cayman, British West Indies.





The outer fringe of Palancar Reef (right) displays the beauty and mystery that have attracted divers to the Yucatan. The lure of this tropical province has always been strong; on the grounds at Akumal is a statue of Gonzalo Gurrero (above), a Spanish sailor who chose to live with the Mayas rather than return to Europe. Undoubtedly the sunsets, like this one at Cozumel (below) were as captivating to the conquistadors as they are today.



## MEXICO'S GATEWAY TO THE CARIBBEAN

STORY BY  
NED DELOACH

PHOTOGRAPHY BY  
NED DELOACH  
AND PETE VELDE

# YUCATAN



The western Caribbean bathes the tropical coastline of Yucatan with warm, clear water abundant in beauty and life. Above the sea is a unique land of ancient heritage and adventure, while below lies one of the earth's most magnificent underwater ecosystems.

In earlier time the jungles of Yucatan flourished with the works of the Mayas. Over hundreds of years they carved away the thick mahogany forest of the peninsula until their civilization conquered the difficult environment. Led by a hierarchy of priests, the Mayas constructed pyramids, temples, and walled cities across their new home. Suddenly, over a period of perhaps fifty years, all construction halted, the people dispersed, and the jungle once more claimed her own. What fate could have toppled such an advanced culture so quickly is still unknown. Today, the area is sparsely populated by descendents of the Mayas, who tenaciously hold on to the alien land.

The Spanish conquistadors came to the Yucatan, but soon found the rich valley of Central Mexico more profitable for exploitation. As the European ways assimilated Mayas, a new civilization developed that found Yucatan too distant, too harsh. Only the most daring ventured into the ungoverned province. They came for the mahogany and chicle that lay deep in the forest, but work was hard and few survived the relentless elements. Only indian slaves, outcasts or criminals could be forced to work in the scattered jungle camps; their only common code was the law of survival.

Yucatan's coastal territory, Quintana Roo, lay mostly



unexplored and unwanted until 1972 when the government of Mexico, after realizing the tourist potential of the region, finally granted statehood. Today this land, which had been remote only a few years ago, is being opened to the outside world. Two new jetports have been built to shuttle thousands of visitors in and out on daily non-stop flights from Mexico City, New Orleans and Miami. Modern hotels and recreational facilities have sprung up at an astonishing pace and a new paved road skirts the coastline connecting many of the superb archaeological zones.

Early in the sixties a new breed of explorers came to the fishing villages of Yucatan's coast. They did not come wielding machetes to invade the secrets of the jungle, but brought tanks of compressed air to explore the sea. What they found was more incredible than they had hoped. The entire eastern coast was bordered by a massive barrier reefline supporting marine life as prolific as any found in the Caribbean. The early divers made their headquarters in the village of San Miguel on the coastal island of Cozumel. The exciting news of the discovery spread quickly through the fledgling sport diving industry. Soon many divers were planning or dreaming about a trip to this underwater frontier.

The territory had sprouted a new industry, underwater recreation. Compressors and air tanks were brought in and set up hastily, while local fishermen were finding more profit in the charter business than their lifelong trade. Unexpectedly the sea had opened a new way of life to this once-distant territory.

#### COZUMEL

Mexico's largest island,



Cozumel, lies 12 miles across deep, blue water from the Yucatan coast. The only connection to the outside world is a new modern jetport. The main town of San Miguel has grown so rapidly that new luxury hotels border the 28 mile coastline in both directions. Presently there are five dive stores and charter boat facilities operating on the island. Located just north of the public pier is Adventures Tropicales operated by Julio Blanco. Next door is Aquasafari, probably the largest and best equipped diving concession on the island with an inventory of over two hundred tanks and two 3000 PSI Mako compressors. Just north of town is the hotel, Cabanas del Caribe, whose diving concession serves the divers from See and Sea Travel Service.

South of the pier are two more stores, Discover Cozumel and Scuba-Cozumel. Discover Cozumel is run by Ernesto Vera, a dedicated diver whose shop is well equipped and well organized. He offers individual diving and also books tours through Go Mexico. Scuba-Cozumel, owned and operated by Pedro Delgadillo, has developed a completely modern diving operation with the addition of the newly completed Galapagos Inn located just south of town. Pedro offers complete diving packages for individuals or groups, including rooms, meals and all diving charters.

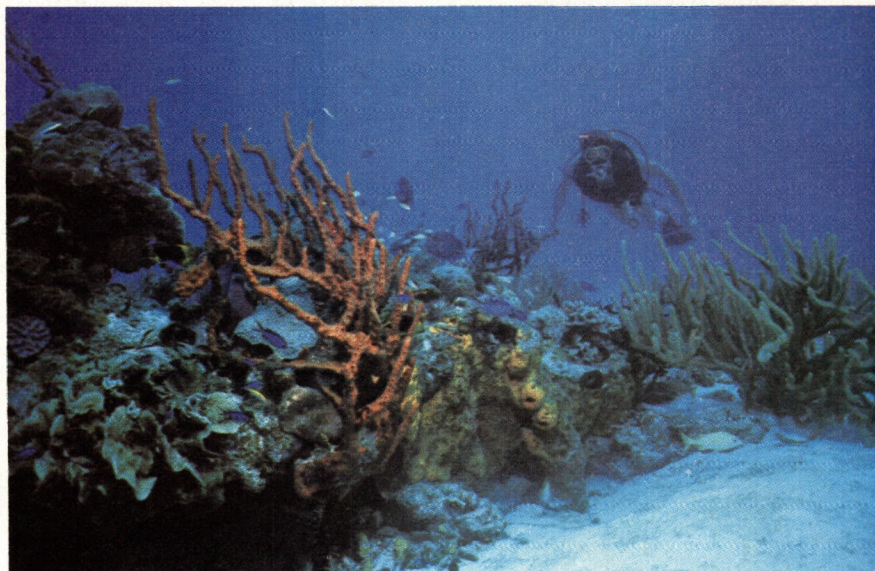






A broken series of reefs border the protected southwestern coast of the island. All of the better reef areas are located several hundred meters offshore and require boat transportation for safe diving. The visibility on the entire string of islands must rank, from day to day, as the best in the Caribbean. The waters here are generally calm due to the guarded locale; currents are moderate to nonexistent.

Diving starts about four miles south of town on Paradise Reef. Depths range from 40 to 45 feet around the coral growths. Diving is easy and interesting among the colorful coral heads and the undercuts and small caves add adventure to the exploration. Scuba-Cozumel uses this area for their night diving activities because of its abundant sea life and its proximity to their dock at the Galapagos Inn. Continuing

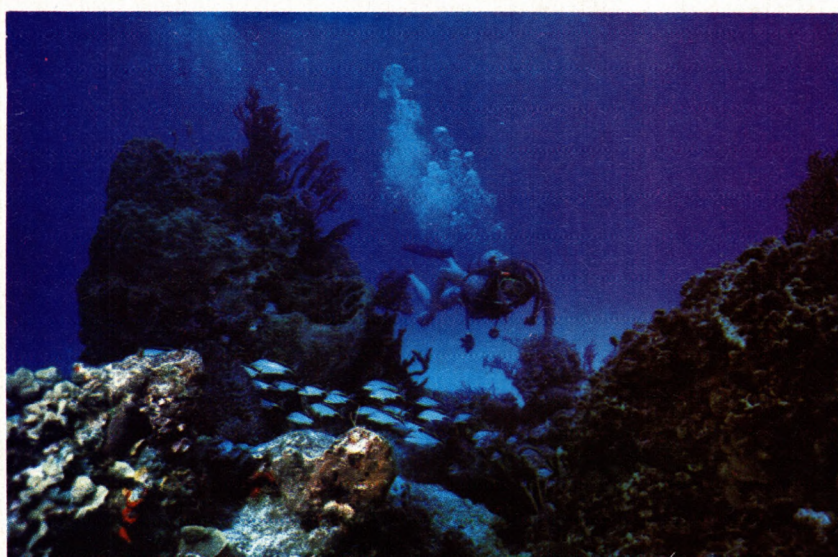
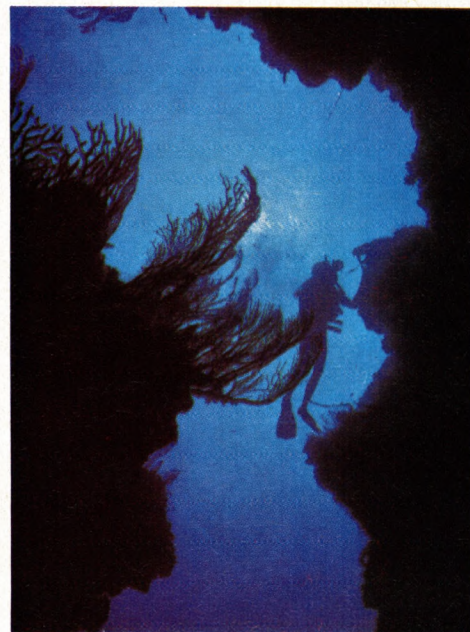
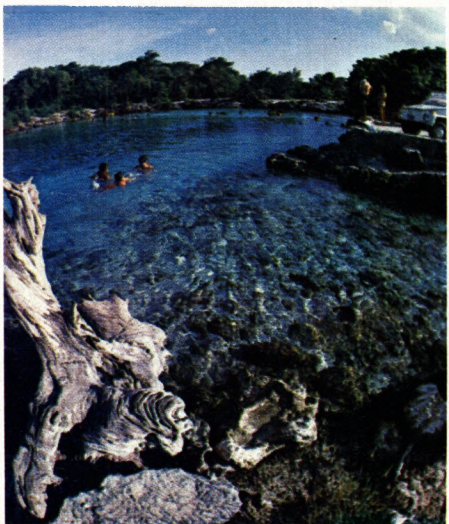
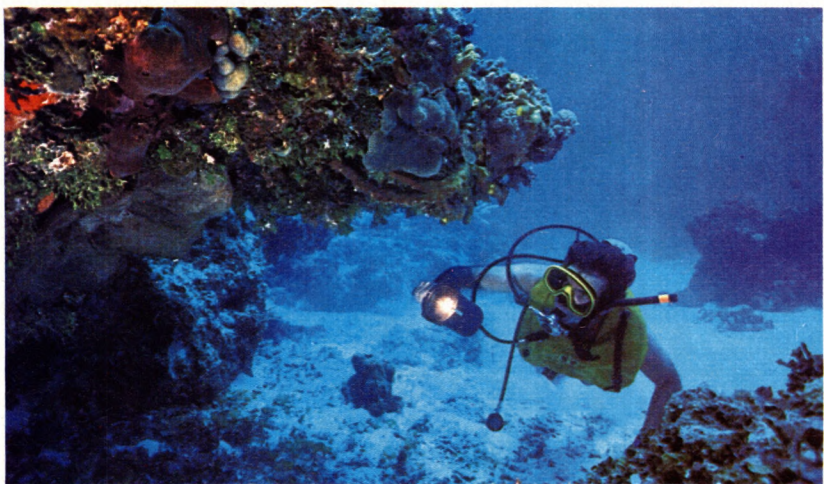


south from Paradise Reef divers pass over Chancanabe Reef with depths from 40 to 45 feet, Cardona Reef, with an average depth of 30 feet, and Santa Rosa Reef with depths from 50 to 70 feet. All of these areas are well worth diving time, but as a common phrase states, "They ain't seen nothing yet," because waiting for divers, near Cozumel's southern tip, is the ultimate reef, Palancar. Centuries of creation have carefully formed a towering fortress or coral heads nearly three miles in length that



**A diver swims through a cloud of fish at El Garrafon Reef. Exploring a cavern in a cenote near Akumal, divers encounter halocline distortion caused by the mixing of saltwater from the lagoon and freshwater from a spring (above).**





**Stunning drop-offs (above middle and right) and shallow areas (above left, opposite page, top) demonstrate the diversity of Palancar Reef. In Chakalal Lagoon a diver snorkels past centuries-old Mayan ruins (above).**

rests on the edge of a 2000-foot underwater cliff.

Palancar's inner reef is one of the sea's most majestic vistas. The huge coral heads dwarf you as you weave through the large fissures that separate the formations of coral. There are hundreds of large caves that cut through the base of the coral heads and with a divers' light, the cave walls look as though they've been painted beautiful reds, yellows, purples and oranges. Light streams through distant exits illuminating the passages and leaving the cave, you





services and rentals are not exorbitant, and you'll always get your money's worth. All the shops charge \$25 for a day of diving, including two tanks and a lunch of fish and conch cerviche on one of the beaches near the reefs. The large motor-sailers, traditionally used for diving, leave the city pier for the hour-and-a-half trip to the reefs. For those divers wishing a faster trip, Scuba-Cozumel operates two 22-foot Aquasports which make the run to Palancar in about half an hour.

However, even with the superb diving and beauty Cozumel offers, it is only a starting point in a complete Yucatan vacation.



face a hard decision on which route to take; all paths lead to more excitement and beauty.

Cozumel also offers plenty of topside exploration. A tourist can rent a car, motorbike, or bicycle in San Miguel and spend a full day visiting the island's many spots of interest. Heading north from town you can travel down hotel row where many of the island's luxury hotels have been constructed along the seacoast. You are welcome when you stop and wander through the beautiful verandas and gardens of some of Mexico's most elaborate buildings, each adorned with colorful handmade tiles and surrounded by flowering vegetation. The San Miguel Aquarium, a short distance south of town, is open daily. Here several large tanks contain hundreds of interesting fish and other forms of marine life from the surrounding waters.

Just off the coastal road, about six miles south of town, is one of the island's most beautiful

sites, Chacananab Lagoon. It is a large, open-water pool filled with clear blue-green water and lined with dense tropical vegetation. It is connected to the sea by a small cave that runs under the road. You can park by one of the small open-air restaurants on the ocean side of the road and spend as long as you like snorkeling among the fish and rock formations in the shallow water. Both Aquasafari and Discover Cozumel have second dive shops at Chacananab to rent snorkel or scuba gear.

Farther south past the lagoon are a series of palm-lined beaches. Many of these strands are deserted and offer a private beach paradise complete with white sand and clear calm waters for swimming, snorkeling, or just relaxing and dreaming.

The road swings around the southern tip of the island and heads north along the rugged Caribbean coast where many small beaches and coves dot the shoreline. Because of the direct force of the currents and waves, snorkeling and diving are not recommended in these unprotected areas.

Another Cozumel plus is the price range available to visitors. Adequate downtown hotel rooms start for as little as \$6 a day and vary to the luxury rates of the modern beach hotels. Food is good and generally inexpensive. Diving

## ISLA MUJERES

Travel connections have greatly improved in Yucatan during the past few years. It no longer takes a half a day of waiting to make connections by ferry, bus or plane to nearby areas. The cheapest and most popular method of travel from Cozumel to the small tropical island of Isla Mujeres is via ferry to Playa del Carmen on the mainland, then by bus to Puerto Juarez for a second ferry ride to the island.

Fortunately, Isla Mujeres is working hard at preserving its natural beauty and peaceful atmosphere. Although a massive construction program is being carried out at the nearby resort of Cancun, this narrow, five-mile-long sand strip remains virtually unscarred.

The village on the island's north end still has sand streets and limits motor traffic to a couple of primary roads. Hotel accommodations are plentiful and are in the low





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PHOTOS/ R.H. STEWART



P.O. Box 1253, Port-Aù-Prince, Haiti



## YUCATAN

*continued from page 93*

to moderate price range. Beach campgrounds have been set aside for the many young people who enjoy roughing it.

The calm waters surrounding the island are not only beautiful, but also provide some most unusual diving. Located north of the island are the caves of the sleeping sharks, made famous by Jacques Cousteau's film documentary shot in 1974. These caves are the only known location where ocean sharks can be found in a motionless state. Why the phenomenon occurs is still unexplained, but the search for sharks among the caves and overhangs makes an exciting dive.

Lying just off the island's southern tip is El Garrafon Reef with its huge schools of fish. The reef is only a short distance from shore with easy access from the beach, the surrounding waters are shallow making the use of tanks unnecessary. From the cliff overlooking the reef the tightly schooled fish appear as a dark cloud lazily moving over the white sand bottom. Swimming towards the schooling fish creates a fork in their movement as they part to accommodate your presence. For a moment you can be completely enveloped by fish and then in an instant the moving passage will turn into clear sea once more.

Another of the island's popular dives is over the fields of staghorn coral of Manchones Reef. The reef runs north and south at a depth of 40 feet in the calm inland waters a short distance from El Garrafon.

Diving trips around the island can be arranged at Mexico Divers, located on the waterfront to the left of the ferry exit. Mexico Divers is owned and operated by Gustavo and Cynthia Rodriguez who have an outstanding reputation for providing safe and enjoyable diving.

### THE CARIBBEAN COAST

Mile for mile, the rugged coastline of Yucatan is filled with more natural beauty, history and excitement than any other area in the Caribbean. A new paved road now cuts its way south through the thick tangle of jungle along the coast to the ruins of Tulum. There it takes an inland course to the city of Chetumal near the border of Belize. Much of the region is still primitive and an adventure to explore.

Fifty-five miles down the highway from Cancun lies the coastal resort of Akumal, one of Mexico's most beautiful and prestigious vacation areas. Spacious Mayan style bungalows are scattered along the rugged palm-lined coast. The remoteness and charm of the locale provides an escape to a tranquil world of natural beauty.

Akumal is the adopted home of CEDAM, an international group of amateur divers and professional historians who have joined together to study, explore and conserve underwater historical sites. One of the many noted accomplishments of the organization was the founding of the first Underwater Recovery Museum in the world. The historical treasures of the museum are housed in a two-story building next to the main entrance of the resort.

Akumal has just finished the construction of a new dive store to help accommodate the influx of sport divers who come to the area to enjoy both the ocean and the crystalline lagoons and freshwater springs that dot the coast. The diving operation is headed by Joe Kelly, a qualified and knowledgeable diver who has spent years exploring the underwater beauty and history of the region. He makes every effort to see that each guest gets the most rewarding diving possible for the time of his stay.

*continued page 102*



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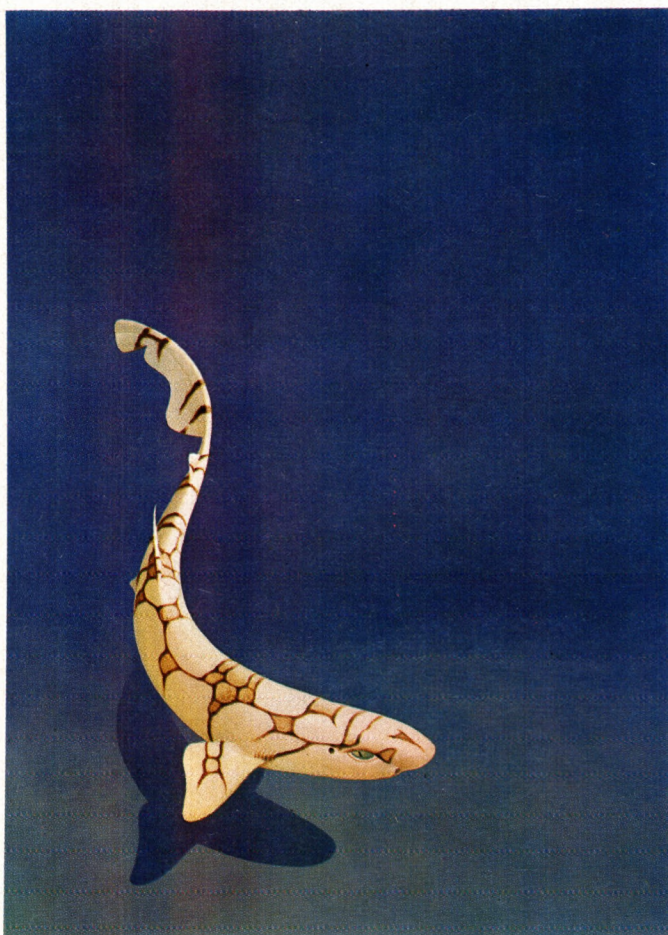
# The Aquatic Artist

## RICHARD ELLIS

T. WALKER LLOYD

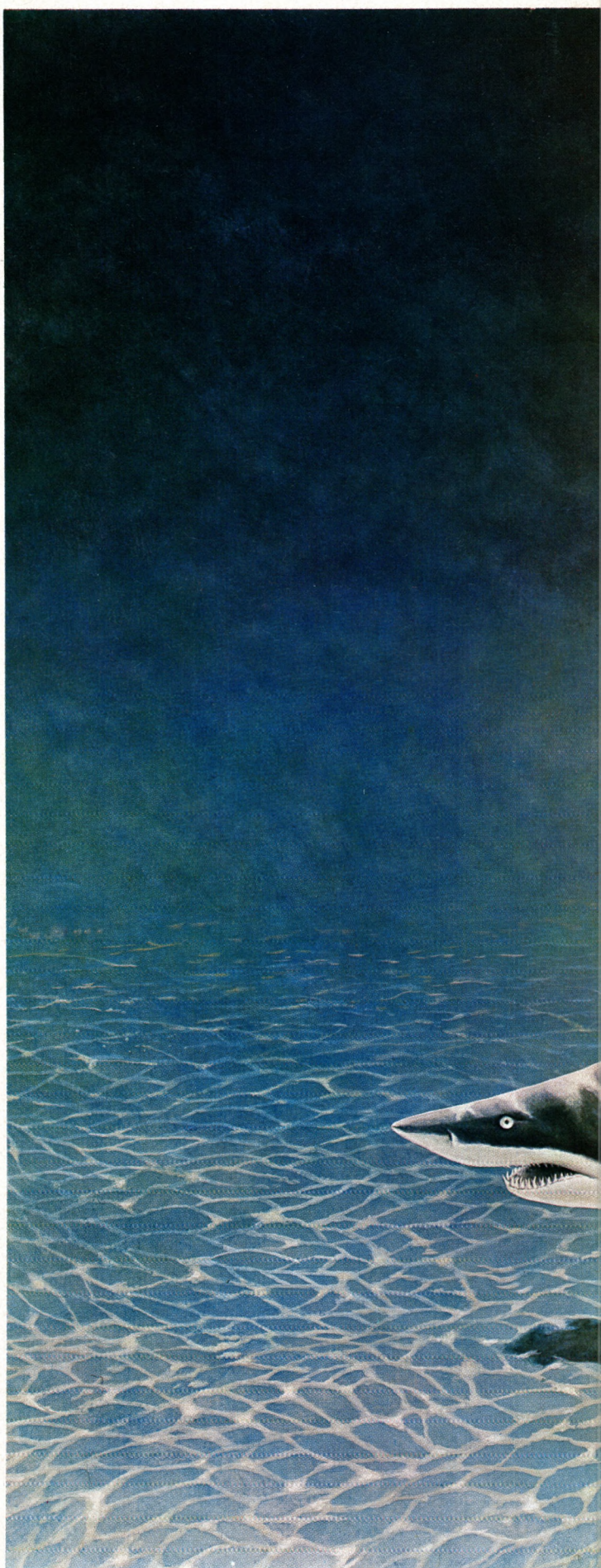


That Richard Ellis is an artist of the first rank is undeniable, although he shuns all pretense and declines such titles. He is, he says, "... merely an illustrator." He "merely illustrates" not only the marine subjects which inspire the greatest awe and



CHAIN DOGFISH

Sport Diver



GRAY NURSE SHARK

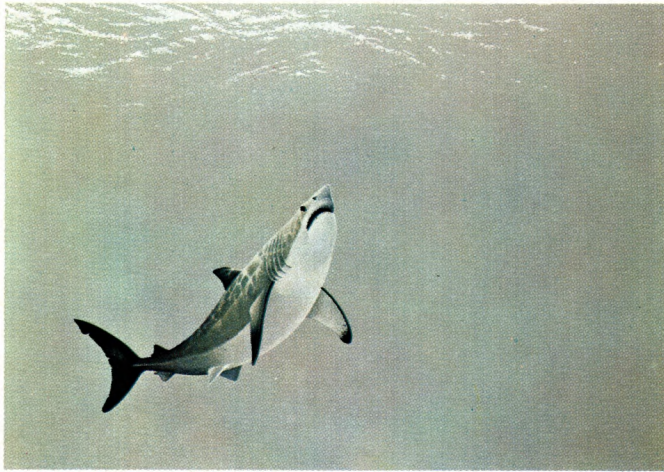




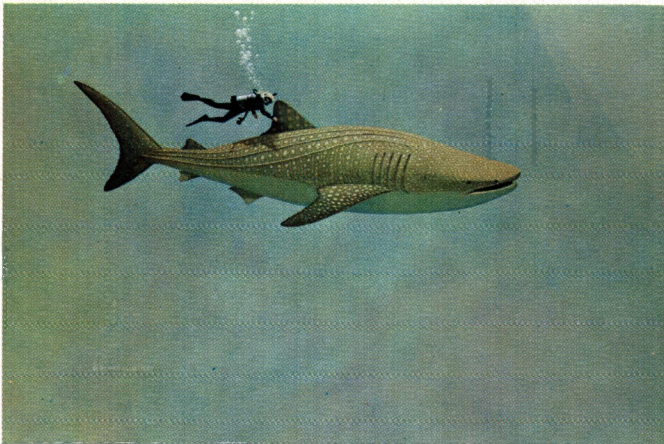
RICHARD ELLIS - 1974 ©



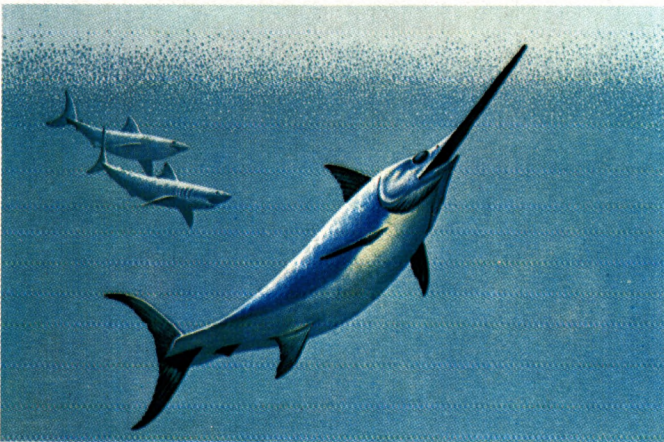
GREAT WHITE SHARK



WHALE SHARK



SWORDFISH WITH MAKOS



BLUE SHARK





fear, but these human emotions are also part of every finished Ellis canvas.

Richard Ellis' illustrations have appeared in numerous publications including *Audobon*, *Oceans*, *Scientific American* and *Reader's Digest* and the original paintings hang in many galleries and private collections.

If this were not enough, Ellis is also a skillful writer. The illustrations reproduced here are part of *The Book of Sharks*, a volume which deeply probes both the natural history of sharks and man's interaction with these elegant predators.

This portfolio is the first of a four part series featuring Richard Ellis. Each portfolio will focus on a different aspect of his work, all of which is drawn from his experiences as a diver. Richard has dived with the creatures he paints. What comes through the paintings is the essence of the subject and the deep respect Ellis has for the sea and its inhabitants.





© RICHARD ELLIS - 1973



BLUE SHARK

RICHARD ELLIS - 1974

TIGER SHARK





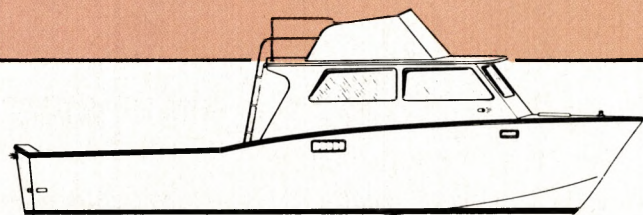


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# YUCATAN

continued from page 94

Akumal's surrounding waters seem to have been planned by a master designer of underwater amusement parks. Just offshore, spreading almost endlessly north and south, is the Caribbean's largest barrier reef. The waters have been closely protected for years by the resort and CEDAM in an effort to preserve the rare beauty for future generations of adventurers. The vast coral gardens are alive with sea life, much as they existed before man ventured underwater. Large schools of game fish, still at peace with man, roam the reefs with dignity. Good sites to dive are as abundant as the reef is immense. Depths range from less than 20 feet on the staghorn gardens near shore to over 100 feet on the mammoth formations of the outer edge. Weeks of action-filled dives can be made on the reef without traveling far from your hotel room or exploring the same reef section twice.

Adding to the wonderland setting of the region are a beautiful series of clear water lagoons, excellent for sightseeing or snorkeling. Fresh cool water from underground mixes with the saltwater to form a brackish environment for hundreds of fish who make the lagoons their home. These areas, called "cenotes," are thought to have been sacred to the early Mayas because of the many temples and offertories that were built around their perimeters. Six miles south of Akumal is Xel-Ha (Shell-Ha), a group of four shallow interconnecting lagoons bordered underwater by caves and undercuts. In the lagoon closest to the sea are the remains of a small Mayan temple.

North from Akumal is the lagoon of Chakalal with a perfectly preserved temple standing near its edge. A small path behind the temple leads to a magnificent spring basin surrounded by a thick growth of mangroves and filled with clear freshwater. Large flat slabs of porous coral rock cover the bottom creating many interesting crevices and overhangs.

North from Chakalal is one of the most dramatic settings to be found anywhere in the Caribbean, the ruins of the walled city of Xcaret. The main section of the small city rests high on a jungle-covered hill overlooking the sea. Cutting its way inland beside the hill is a narrow blue lagoon of stunning beauty. A path leads from the end of the lagoon along a steep limestone cliff to a series of caves filled with clear, calm pools of fresh water. For a brief period early in the morning sunlight is able to penetrate through the dark canopy of jungle trees and spotlight the limpid pools within the caverns. About 50 feet back into the caverns the waters lead underground into one of the hundreds of hidden rivers that help form the massive Yucatan aquifer. Two major archaeological zones are only a short distance from Akumal. The famous walled fortress of Tulum perched high on a bluff facing the sea and the vast inland city of Coba, whose huge pyramids and temples are still pristine. Both parks are opened daily to visitors for a small admission fee.

Only a few of Yucatan's many coastal attractions have been briefly described to give an idea of the enchantment of this intrepid land of adventure, history and serene beauty with its many mysteries and treasures waiting to be discovered anew by each of her welcomed explorers.

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# UNTERSEEBOOT

ARTICLE BY  
HOMER HICKAM

# 352

PHOTOGRAPHS BY  
BILL LOVIN



4 April, 1942

No band played as Kapitanleutnant Hellmut Rathke ordered his crew to cast off all lines. Silently, the *Unterseeboot* 352 slipped out of the St. Nazaire harbor. Rathke wanted to leave as quietly as possible. British aircraft and destroyers always seemed to know when a U-boat took to sea and Kaleun Rathke had already fought the Royal Navy with near-disastrous results. On the U-352's maiden voyage he had boldly attacked a British destroyer off Iceland, but his torpedoes failed to explode. While Rathke desperately tried to get away into the icy deep, a horde of British

corvettes and aircraft converged, dropping hundreds of depth charges after him. Badly shaken but unharmed, the U-352 managed to slip away and limp home to be refitted. But Rathke was happy he was not going after the English again. His new assignment was considered a plum by the German submariners. He was on his way to what was being called the "American Shooting Gallery", the shipping lanes off the eastern coast of the United States where U-boats had inflicted a sound defeat on the American Navy and were now in the process of devastating the American merchant fleet.





Rathke looked over the side at a blotch of black paint on the conning tower covering the spot where the Flensburg coat of arms had once been displayed. It reminded him of the German coastal city where his wife and small daughter lived. He briefly wondered if he would ever see them again and then turned his thoughts toward his duty. After reaching open sea safely, the Kaieun ordered "langsame Fahrt", slow speed, for the long, dangerous trip across the Atlantic.

8 May, 1942

The morning was still dark, the wind chilly and biting, when the tiny Coast Guard Cutter *Icarus* pulled away from its berth on Staten Island, New York. The *Icarus* crew was edgy over its new assignment. The orders were to run the gauntlet of U-boats all the way to the Florida Keys. Although it was early in the war, the *Icarus* had already attacked submarines off the Ambrose Channel and Atlantic City and each time the Germans had been able to get away. Some officers and men wondered if the *Icarus* was meant to be a sacrifice. How could they go so far alone without being attacked? The *Icarus* was equipped only with obsolete sound detection gear, some depth charge racks, a World War I vintage Y-gun, .50 and .30 caliber machine guns, and a 3-inch, .23 caliber deck gun. Moreover, due to ammunition restrictions, the gun crews had not had any target practice for over a year. The ship's commander, Lieutenant Maurice D. Jester, refused to allow it. Lt. Jester was respected by his crew but considered somewhat aloof, he was quick to order punishment but rarely gave praise. The *Icarus*, however, was a cocky ship. As it cleared the harbor, a passing tug signaled G-O-O-D-L-U-C-K. After thinking for a moment the *Icarus* signal man brazenly flashed back, T-H-A-N-K-S-W-E-W-I-L-L-D-O-O-K.

*Surviving crewmen of the U-352 are led from the Icarus to a stockade at Charleston Naval Yard (upper left), Leutnant Hellmut Rathke (second from right) and his executive officer Oskar Bernhard (middle) with American and British Intelligence officers. Hatches giving access to the galley and conning tower have been pried open by divers (right).*



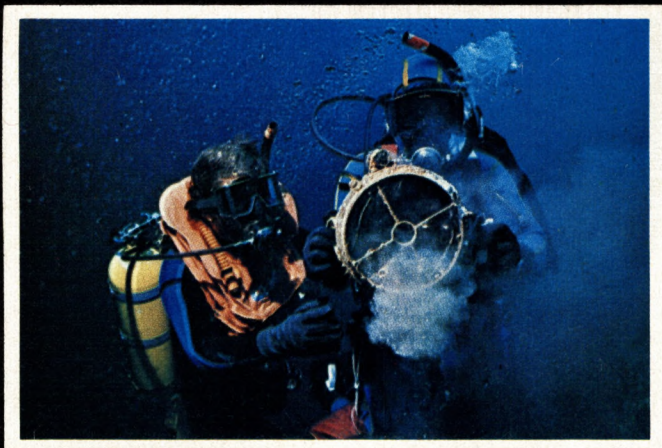
9 May, 1942

The U-352 chugged slowly off the North Carolina coast. Kaleun Rathke was on the bridge, carefully scanning the horizon while others of the crew nervously watched the sky. Since the U-352's arrival in American waters, nothing had gone as planned. On the way over, Rathke learned that the American Navy had finally drawn blood. The U-85 had been sunk by the U.S. Destroyer *Roper* with all hands lost. The Americans were learning some of the rules of submarine warfare, a blackout had been ordered on the coast and the cargo vessels had stopped running alone. Rathke was faced now with armed convoys; worse, he would have to attack them during the day since there were no lights to silhouette his prey. Only once this trip had Rathke been lucky, but even that turned sour. He had caught a refrigerator ship steaming alone, a good target. The U-352 quickly lined up on the surface and fired two torpedoes, but nothing happened, both torpedoes were duds. Before Rathke could try again, a dive bomber jumped him. Scrambling back inside the conning tower, Rathke hurt his knee on a hatch cover. Bellowing orders in a fog of pain, he was barely able to get the submarine submerged in time. Three times since he had attacked freighters with no hits. Rathke now had a sick feeling about the entire mission.

Suddenly, he spotted a single mast rising from the horizon. Another chance at a lone freighter! Rathke anxiously peered into his binoculars to get a glimpse of the ship and then cursed. It was an armed ship, small







but potentially deadly to him. He barked orders to dive. He would have to sink it before it could do the same to him.

The *Icarus* was a very quiet ship except for the muffled roar of her two Winton diesel engines. Gunner's Mate John Bruce had spent the day doing a number of small sailor's chores, now, along with most of the crew, he had drifted off to his quarters for an afternoon snooze. On the bridge, Lt. (j.g.) Edward D. Howard, the Executive Officer, kept a steady course. The sea was unusually smooth, the wind negligible. The sound room called up something unusual, something they described as "mushy", one of the sound men reported that he believed they were being followed by a submarine. Howard considered calling General Quarters but had decided to call Lt. Jester to the bridge instead; now ten minutes had passed but Jester was still not there. The sound men called again. It was 1625 EWT, and the sound contact improved. Suddenly, the *Icarus* shook as if it had run aground. Deck plates jarred and lights flickered. Below, John Bruce and other crewmen were thrown from their bunks. Scrambling to the deck, Bruce saw an amazing sight. Two hundred yards off the port quarter there was a huge swirl of mud and water, as if the sea was boiling!

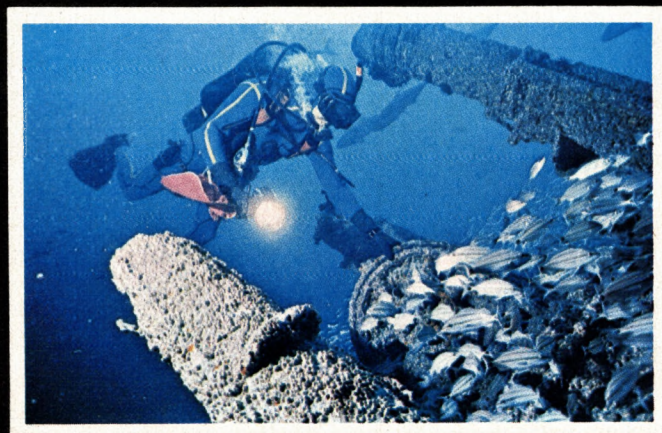
Behind and below the *Icarus*, Kaleun Rathke heard a gratifying explosion. Success! He ordered the U-352 to periscope depth. He scanned the sea for a sign of the burning cutter. He spotted the spreading brown foam. Had he blown the American ship completely out of the water? Anxiously, he rotated the

periscope and then stopped. Again, he cursed. The cutter was maneuvering, men on deck swarming to their guns and the depth charge racks. Rathke ordered the periscope down. He had to hide, but where? In this shallow water, he had but one chance, and quickly ordered the U-352 into the boil of mud and foam.

Lt. Jester was on the bridge of the *Icarus*, it was 1630 EWT. His sound men called up their recommended course and Jester found that the bow of the *Icarus* was aimed directly at the turbulence left by the torpedo. Jester ordered a diamond pattern of five depth charges dropped and as they splashed into the center of the muddy swirl, the *Icarus* veered away.

A million sledge hammers struck the hull of the U-352 at once. Lieutenant Joseph Ernst, in the conning tower with Rathke, was hurled into a control panel and his skull crushed. Lights blinked on and off and then died, leaving only the dim emergency lights. Rathke called for a damage report. Both electric motors had been knocked off their mounts. Still, the U-352 was on the move. The depth charges had blown away the deck gun and a good portion of the sheet metal surrounding the conning tower. The U-352 was now slightly buoyant and it drifted, its stern dragging, toward the west.

The *Icarus* was writing question marks on the sea. The cutter weaved after its target, the sound men listening to a strange crunching noise. Jester ordered two V patterns of charges dropped, then a single charge. On the last drop, a massive torrent of bubbles rose to the surface.



*The U-352's signal light, minus glass lens, survived the pounding of depth charges and the Icarus' deck guns (upper left). The conning tower's sheet metal fairing was blown away during the battle (top middle and below left). The torpedo loading hatch is exposed, along with the cradle that held extra torpedoes between the outer hull and the pressure hull (upper right).*





*The final scenes of the sinking were played inside of the conning tower (above right) Although the U-boats caused an incredible amount of damage to Allied shipping in the beginning of the war, by war's end 784 of the German Navy's 1,162 subs had been lost. Some deadly reminders of the seriousness of the conflict*



*remain aboard the U-352. A diver holds an 88 mm cannon round (upper left) and another, once part of a whole stack of ammunition, lies near the hull (bottom). A round from the U-352 surrendered to the Marine Corps at Cherry Point, N.C. was found to be live, and was successfully detonated.*

The U-352 was nearly finished. The pressure hull had held but numerous leaks in the buoyancy control system had been reported. Rathke ordered all remaining tanks blown and his gun crews to stand by. He was coming up, but not to surrender. The U-352 was coming up to fight.

31 May, 1977

The dive boat *Easy Step* plowed into the sea off Morehead City, North Carolina. The ocean, the feared Graveyard of the Atlantic, was as flat and calm as a mountain lake. Bob Eastep, skipper, kept a close watch on his blinking LORAN. We were near the site of the bloody battle between the USCG *Icarus* and the U-boat 352. For me, it was a return trip. Over a year before, shortly after the hulk of the U-352 was discovered, I had joined a team of divers to explore the wreck. Using a hand winch, we had popped the galley hatch open and scanned the interior with our dive lights. The wreck proved to be so interesting I had gone on to research it thoroughly. Through letters, I had gotten to know two men who were involved in the battle, John Bruce of the *Icarus*, and former Kapitaneutnant Hellmut Rathke of the U-352. They told me the tragic story of what happened before and after the U-boat came up to fight it out with the cutter.

Accompanying me on this trip were Army Captain Dave Todd, an experienced divemaster, and Buddy Stokes, and Underwater Photography Chairman of the Florida Skindiving Association. Although bad weather hampered our attempts to dive the U-352 on the 35th anniversary date of its

sinking, today, Memorial Day, seemed also appropriate.

Bob Eastep pushed his face very close to the ringing fathometer and then glanced back up at the LORAN. The fathometer line jiggled up and then quickly back down. Bob spun the wheel. "That's her!" he crowed. Buzz Mitchell, a North Carolina diver, dropped the anchor. The *Easy Step* backed away and then stopped as the anchor snagged the U-boat 110 feet below. We scrambled into our scuba gear.

The anchor line disappeared into blue infinity. It was incredibly beautiful, swarms of mullet flashing far below, dozens of huge amberjacks soaring after the smaller fish. The water was very warm so our light, 3/16 inch wet suits were more than adequate. Halfway down, I spotted the 220-foot long wreck. Visibility was excellent, nearly one hundred feet of clear, crystal blue water. We dropped on deck near the stern torpedo loading hatch to tighten belts and check gauges and cameras.

Our first objective was to check the props. We found the twin propellers in excellent condition though thickly encrusted with barnacles. I scraped away at them until my knife struck metal. The bronze alloy still glinted brightly. After photographing the stern, we moved forward toward the conning tower. The stern torpedo hatch stood wide open, still ready to receive the torpedoes meant for the single tube aft. We found the stern reserve torpedo canister almost off the deck, wedged between the steel struts that once supported the wooden deck, which has long since

*continued on page 112*



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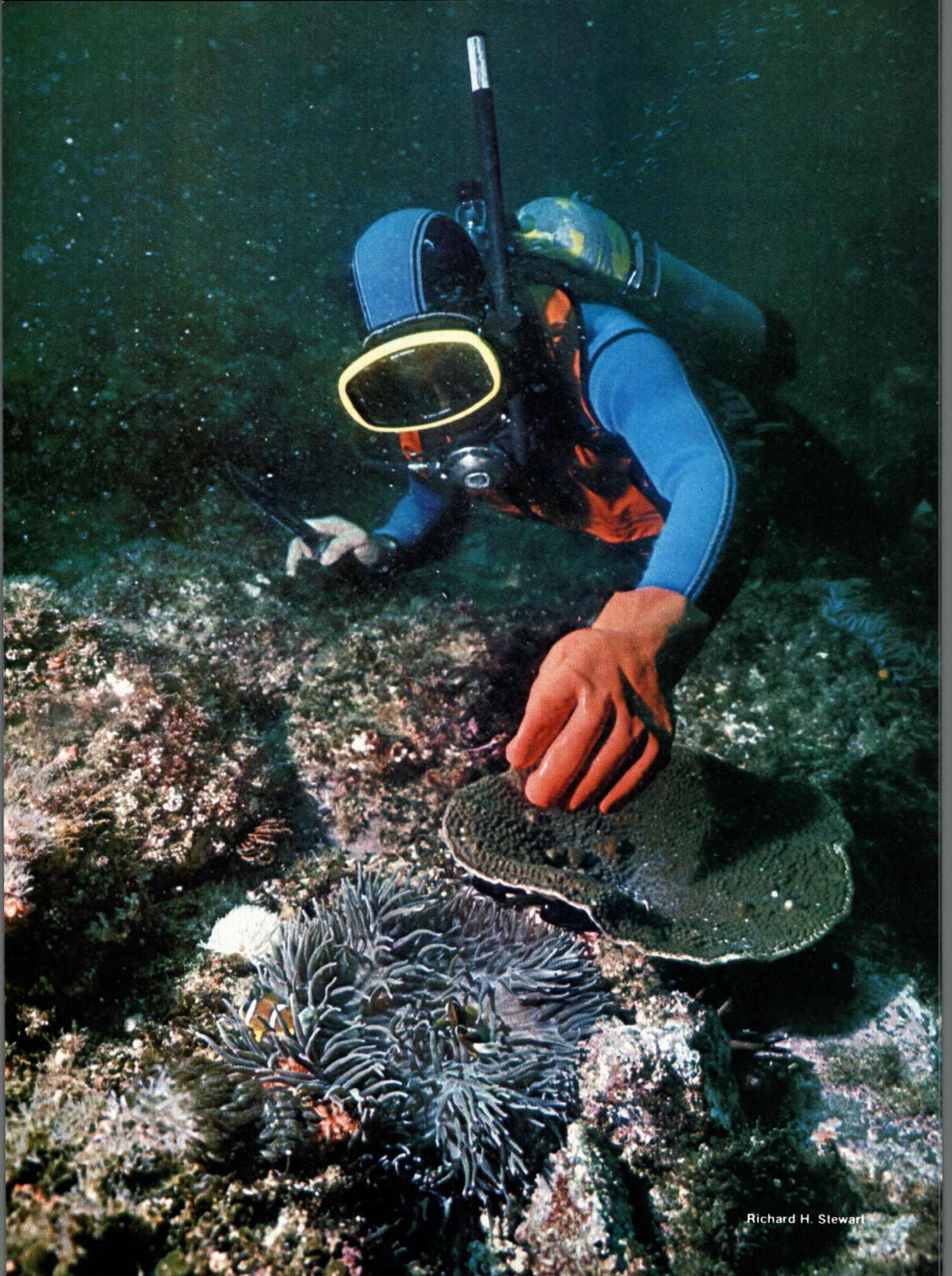
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Richard H. Stewart



# Underwater Photography

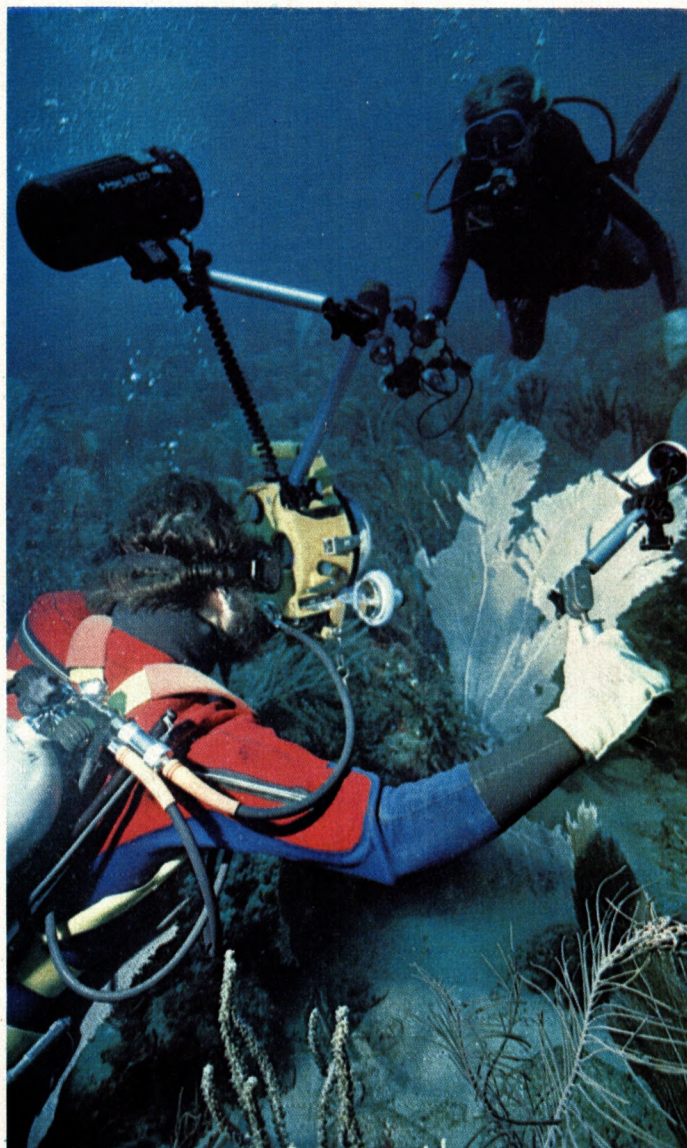
by Richard H. Stewart

To the topside photographer, "wide angle" usually refers to a type of lens used for special purposes, for instance when a subject must be photographed within a confined area. For the underwater photographer, however, the wide angle is more often considered as the primary lens. This does not mean that a 35, 28, 21 or 15mm lens is a "normal" lens in terms of its focal length, but rather that most underwater photographers who produce consistently excellent work are using wide angle lenses for many of their shots.

Wide angle photography is not new. Underwater photographers have used many wide angle systems over the years. The cost of these special systems and lenses prevented others from following the trend until recently. The heavy influx of divers into underwater photography has encouraged the photographic manufacturers to develop new and less expensive products. As the purchase of a 35mm reflex camera with housing allowed the owner to buy wide angle lenses from the camera maker, increased demand by Nikonos owners led to the development of a half dozen wide angle lenses that range from under \$200 to \$1200.

## LIGHT AND WATER VISIBILITY

As light passes from air into water, it is bent, diffused and scattered. How far the light will penetrate is partially determined by the density of suspended particles in the water. If visibility is good, the light will penetrate deeper. If visibility is poor, the light will be diffused and absorbed by the suspended particles.



## Wide Angle Lenses

Photography in 5-foot-visibility water, such as the photograph at left, would have been lost if shot with a standard 35 or 50mm lens.



In any case, there will not be any appreciable amount of red light in the ambient illumination below 10 feet. As you descend deeper, fewer colors of light will penetrate the water, causing the scenery to appear monochromatic, one shade of bluish gray. To replace the color lost by absorption, an artificial light source is required.

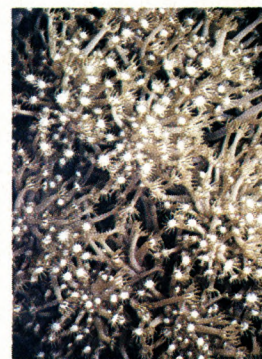
In using the light source, another problem will appear, one commonly called backscatter. Light from the flash may be reflected back into the lens by suspended particles in the water. This causes the appearance of small white dots in the photograph. There are two corrective measures you can take to minimize or eliminate the backscatter. The first is to move the light source so that the light reflected from the particles does not return to the lens. The other is to use a wide angle lens. The wide angle, specifically a 21mm or 15mm allows you to move in close without cropping out portions of the subject, as would be the case with a longer focal length lens. For example, obtaining a full length photograph of a diver with a 35mm or 28mm lens will require a subject-to-camera distance of six to eight feet. Using a 21mm or 15mm lens will reduce that distance to three or four feet. Moving closer reduces the amount of water and suspended particles between lens and subject, thus significantly reducing backscatter.

#### VERSATILITY

The most practical aspect of wide angle photography is in the reduction of backscatter, but there are others ways in which the wide lens may be effectively employed. The 21mm and 15mm lenses have a minimum focus distance of 30 inches and 6 inches respectively. By moving in close to a foreground subject (anemone, sponge or sea fan) and placing a secondary subject (divers or fish) in the background, a photograph may be achieved which conveys a sense of depth and action. Your light source should be positioned at the correct distance to balance the exposures for both artificial and ambient light. The wide angle lens' inherently greater depth of field will help render both the foreground and background subjects in sharp focus.



One of the largest problems incurred with low visibility photography is backscatter. At left, this photograph lacks color and sharpness due to the reflection of particles suspended in the water. Moving in close to the subject and balancing artificial and ambient light can produce results such as this (bottom left). With larger subjects, such as this anemone (bottom right), the wide angle optics can be used as a close-up lens.



ALL PHOTOGRAPHS  
R. H. STEWART





35mm



28mm



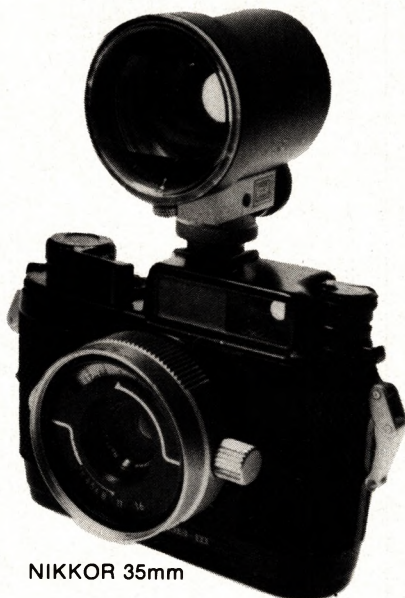
21mm



AQUACRAFT 20mm



NIKKOR 28mm



NIKKOR 35mm



SEACOR 21mm



NIKKOR 15mm

## DISADVANTAGES

There are almost no disadvantages to the wide angle lens when used underwater. The typical "barrel" or wide angle distortion experienced with topside wide angle lenses is not nearly as evident, and in most cases is unnoticeable. Many Nikonos photographers carry two systems during each dive. The first is one or more bodies with wide angle lenses, the other a macro or close-up system. For photographers who use a housed SLR, a Nikonos set-up may be carried to cover those shots unattainable with a wide angle system. Either way, the photographer is prepared to cover whatever possibilities present themselves on the dive.

## PRICES

Wide angle equipment ranges anywhere from \$200 to \$1200. The best choice depends on your financial ability or your desire for quality results. There is a difference in the finished photograph in most cases, but it may not be detectable until the photo is greatly enlarged. As a professional, there is no question as to the quality you must deliver. As an amateur, you only have to satisfy yourself.

For the photographer not using Nikonos or housed 35mm SLR, there are not now any wide angle lenses specifically for instamatic or rangefinder cameras, but as demand grows there should be more development in this area. Meanwhile, visit your local camera store and ask to see the type of accessory lens that fits over the front of your lens to increase the angle of acceptance. These accessories normally range from \$15 to \$25, and while the quality is marginal, they are an alternative.

Considered a special purpose or accessory lens on the surface, for the underwater photographer, the wide angle is not only a primary piece of equipment, it is almost a way of life.

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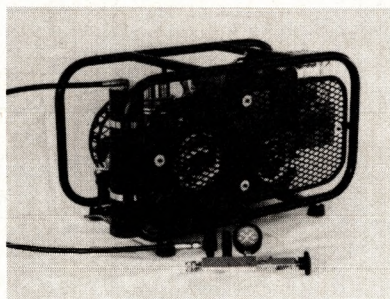
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## UNTERSEEBOOT 352

continued from page 106

rotted away. Two odd-shaped devices flanked the hatch, the exhausts for the U-boat's twin 3000 HP diesel engines. Dave crawled partially inside the hatch and flashed his light into the silty interior. The bulbous device he later reported protruding from the silt was one of the electric engines the *Icarus* had stilled forever.

Forward of the torpedo hatch was a maze of air intake and exhaust tubes and vents, all serving the diesels. In the maze was the galley hatch, which I had worked so hard to open during my first visit to the U-352. It swung freely now, its brass pins still in perfect condition. Buddy led the way to the conning tower.

The con is perhaps the most interesting yet the most misunderstood feature on the wreck. Divers who expect the sleek features they have seen on subs in the movies are sorely disappointed. The streamlining of the U-352's tower was blown away by the *Icarus* leaving only a bulge topped by periscope and instrument stalks. Arriving from the stern, I ticked off the features of the con. First, the cylindrical ammunition storage canisters, then the attack periscope, the open hatch to the control room, the torpedo aimer for surface attacks, and the sky/navigation periscope. I carefully entered the tower, my doubles clanging on the narrow hatch. On my visit before, we had uncovered a human collarbone in the silt, a portion of the skeleton of Lieutenant Ernst. The collarbone was gone now and there was evidence of visits by other divers. Many of the gauges had been ripped from the walls and others smashed in futile attempts to wrest them free. The mutilation of the deep wrecks off North Carolina is tragic and the U-352 has suffered many indignities since its discovery in 1975.

I looked up. I could see all the way to the surface through the hatch, a shimmering blue circle. There, 35 years before, men had fought and died. Rathke wrote:

*"I was able to surface with the bow only so far that the upper hatch of the tower was ten centimeters above the quiet water level. I had intended to have the .30 caliber machine guns and the 88 mm deck gun manned and to defend myself somehow. But no weapon was operational anymore. Whereupon I ordered the crew to get out and sink the boat. Two young officers refused to leave the boat immediately and went under with it. Thus they accomplished the scuttling*



*by sacrificing their lives. While I swam in the water together with the survivors, the water around us was red with blood because one man had lost his leg, another one his left arm under heavy loss of blood. The Icarus (sic) machinegunners fired at us all through the evacuation."*

I climbed out of the conning tower and joined Dave, Buddy and Buzz near the gaping hole on deck where the 88 mm gun had been bolted. Again, I noted that other divers had visited the U-boat since my last dive. Where there had been a stack of 88 mm rounds, not one remained; someone picked up some very deadly souvenirs. Bob Eastep confided to me that he had taken one of the shells away from a diver and carried it to the Cherry Point Marine Corps Station for demolition. The Marines reported that the round was in excellent condition and detonated in good order.

The torpedo canister stored on the forward deck appeared unmolested. The torpedo inside was of the latest German design of 1942, the G-7e electric torpedo; but the torpedoes had proven faulty for Rathke. To this day, he wrote, he wondered if their failure had been the result of sabotage, and if so, who had done it?

The forward torpedo hatch was open. The crew had thrown this and all the other hatches open to escape their sinking craft. On deck, they were met by withering machine gun fire from the *Icarus* Lt. Jester thought the Germans were trying to man their guns, and in the confusion of the surfacing, no one on the *Icarus* guessed that the U-boat was, in fact, defenseless. John Bruce wrote:


"A great air bubble came up in our wake astern and in a matter of seconds she came out of the water bow first at about a 45 degree angle. The sub's bow almost immediately settled and she was above water from a little aft of the conning tower forward. Her rear decks were just awash and her stern completely under. The sub crew started pouring out of the conning tower on the side away from us for protection because we were raking her decks with gunfire. One shot from the three-inch deck gun went into the conning tower. The German crew had inflatable vests on and my first impression seeing them in the water and in the glow of the late afternoon sun was that they were dark complexioned and maybe they weren't Germans at all, maybe they were Japanese. The sub was lying off our beam and in a very short time we ceased fire and the sub sank beneath the surface. She must have been taking water bad because it was only a matter of a few minutes that she remained on the surface. We pulled

continued page 115

For years, the compact, rugged Nikonos has been the standard for underwater 35mm photography. It's the only camera that needs no bulky housing, lets you shoot at depths of 160 feet, and comes up with pictures that testify to the quality of its famous Nikkor lens. And, the latest Nikonos III is the fastest and easiest handling yet.

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## SPONGES

continued from page 86

a suitable substrate is located, the sponge will continue to grow and develop its own branches. This method of reproduction is called budding.

The skeleton of most sponges consists of hundreds of thousands of tiny spicules — microscopic limestone or glossy rods or stars. Connective fibers of spongin provide additional support. Some sponges have no spicules.

Many sponges produce a noxious biochemical substance to discourage predators. Also the needle-like spicules provide an effective defense mechanism. A few species are even poisonous. When a fish nibbles on a sponge or a pollutant is introduced into the area, a visible cellular response may occur. This passive defense mechanism takes place because these species are equipped with primitive muscle cells (myocytes) which contract when injured or irritated, completely closing the opening (osculum) on smaller sponges in as fast as 3 to 10 minutes.

Many tiny inhabitants occupy the pore spaces among the sponge fibers. Polychaetes, copepods and numerous other small organisms reside in the complex canal system with the sponge. Entering through the small pores of the sponge while still in the larval stage, many creatures live out their life cycle inside the sponge after they grow so large they are no longer able to leave the sponge's liquid tunnels. Brittle stars, shrimps and fishes can be found around the oscules of many vase-shaped sponges. The outer surface of the sponge serves as a substrate for anemone-like animals called zoanthids. Also commensal crustaceans have been found in deep water sponges.

A few species of sponges have commercial value and are sought after for domestic or industrial use. The author refers to the historical methods of sponging in the *Sea Frontier's* article, "Sponges: Silent Hosts of the Sea." These included poling or harpooning with a three-finned hook on the end of a pole of variable length; diving, either hard-hat or nude, and dredging. During the first half of the century, sponging grounds off the Florida Keys and Tarpon Springs were among the most productive in the world. Outbreaks of disease from 1938-1952 eventually depleted the sponge grounds in Florida. They are recovering and are again being "fished", but are not nearly as productive as they used to be.

Sponges have become popular

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## UNTERSEEBOOT 352

continued from page 113

alongside and took the survivors aboard. There were 33 out of a normal crew of about 45."

I moved off into the sand forward of the bow to get a different perspective of the U-boat. I turned and found myself with a view of a German Type VII-C U-boat very few men have ever seen and lived to tell about; nose-to-nose with the deadly craft. Now it seemed more pitiful than deadly, its bow buried in the sand as if it were still hiding from the *Icarus* now gone for so many years. It was, it seemed to me, a sad end for such a proud craft, but its brethren had fared no better. Of the 1,162 U-boats of the World War II German Navy, 784 were lost. Of the 41,000 men in the U-boat service 28,000 died and another 5,000 taken prisoner.

Dave swam out and showed me his dive timer. It was time to go if we wanted to avoid a lengthy decompression. We gathered up Buzz and Buddy and made our way back to the anchor line. It was quivering. A storm had moved in while we were down and the *Easy Step* was wallowing in a sea suddenly gone mad. We hung on at ten feet for a five minute safety decompression and then surfaced, our BC's hissing like snakes. A vicious current swept us back to the stern where Bob waited to help us aboard. Once he had us safely on deck, he pulled the anchor and began to run for shore; the Graveyard of the Atlantic is no place to take chances. Still in my wet suit, I sat on the engine cover and watched the tomb of the U-352 disappear as the gray mist swirled over it. On that spot thirty-five years before, the *Icarus* had picked up the shocked and bloody submarine crew. Kaleun Rathke was the last man aboard. Rathke had not mentioned the event to me but John Bruce remembered it clearly. He wrote:

*"The German commander saw the stretcher that had the boy in it who had lost his leg. He went over to it and stopped and took the boy's hand. 'It was all for the Fatherland,' he said. The boy died four hours later despite our best efforts to save him."*

It was over now, over for the men who fought and died, and over for the divers who came to mark their battle. It had been a good dive. We had thought about the battle and witnessed its tragic result. That was enough. I turned away from the Graveyard.



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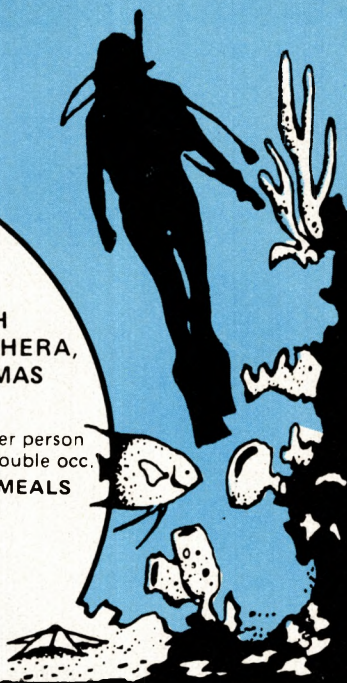
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**NEED A LIFT ?**

## SPONGES

continued from page 114

subjects for underwater photography because of their beautiful colors and unusual shapes and sizes, and the great numbers in which they exist on many coral reefs. Even though they are considered the lowest form of multi-celled animals, sponges provide a significant contribution to the coral reef system, in the form of shelter, to billions of tiny creatures whose survival depends on the animal kingdom's simplest creatures.

### DEMA Trade Show

The third annual Dive Equipment Manufacturer's Association Trade Show will be held at New Orleans' Grand Hotel January 20 through 23.

The Grand Hotel is situated on historic Canal Street, just three blocks from the renowned French Quarter. Also a short walk from the hotel, a 10¢ shuttle bus renders even more attractions available from the convention site. The hotel itself offers 770 rooms, two restaurants and a rooftop pool.

The 1979 DEMA convention is following on the heels of a rather successful predecessor: The second trade show hosted over 1300 individuals representing dive retailers from all over the world anxious to peruse the 113 booths the manufacturers set up. Held in Miami Beach, the 1978 convention also offered a commendable selection of seminars, repair clinics and evening social events. In addition to bringing many dive manufacturers and retailers together, the four-day event also fostered the emergence of approximately 200 new products. New materials, new designs and a plethora of colors little used before graced the counters and displays of the exhibitors creative booth spaces. From fins to masks, T-shirts to tours and suits to submarines, the second DEMA trade show proved to successfully be educational and entertaining in its efforts.

The 1979 New Orleans convention will follow a similar format to the preceding years'. Information concerning seminars, clinics and demonstrations will be made available at a later date. For further information concerning registration and boothspace contact DEMA at: P.O. Box 4067, Irvine, California 92716.

Judging from the increased participation and enthusiasm of the recently passed shows, the 1979 DEMA convention will be the "event of the year" for dive retailers and manufacturers. Don't miss it.



# 1978

## SPORT DIVER MAGAZINE

### UNDERSEA PHOTOGRAPHIC INSTRUCTORS ASSOCIATION

# PHOTOGRAPHIC COMPETITION



First Place, Saltwater Color  
Donald Arneson; Key Biscayne, Florida Nikonos II

The response to the first annual Sport Diver Magazine/Undersea Photographic Instructors Association photo competition was incredible. Entries were received from as far away as Australia and Austria, with heavy participation in all categories by advanced amateurs and beginners alike. As the emphasis of diving shifts to focus on non-destructive underwater activities, photography has become a major source of recreation.

The winners of the SPDM/UPIA competition will receive handsome wall plaques denoting their achievement, and the grand prize winner, Donald Arneson of Key Biscayne, Florida, has won a week-long vacation for two at Small Hope Bay, Andros Island, Bahamas. Andros is noted for its exciting photographic potential and its location on the world's third largest barrier reef.

Entries are now being accepted for the second SPDM/UPIA contest as per the instructions on page 123. There were many excellent photographs submitted; the photographers whose work is depicted here are to be congratulated for their insight and skill.

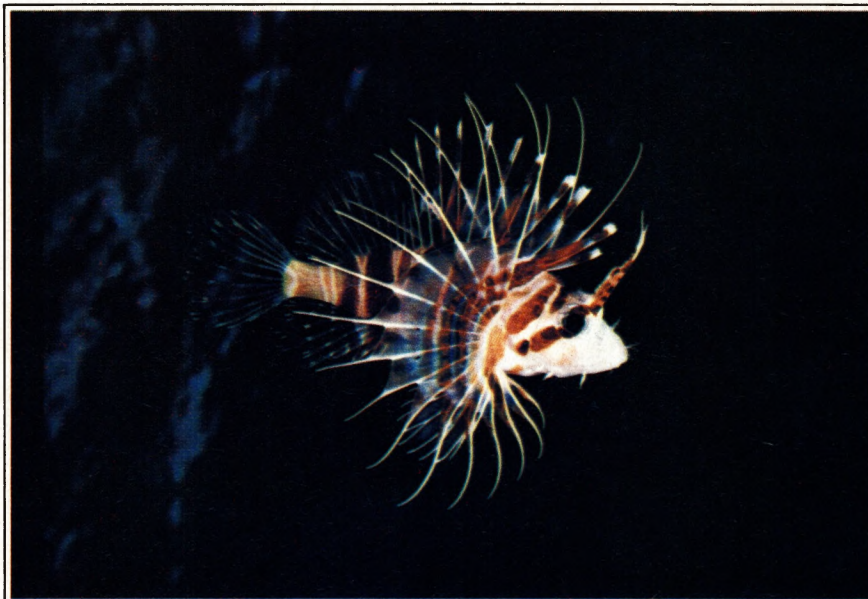


From the movies received for consideration, the two that showed the most consistent use of story line and good lighting were made by members of the dive club Oktopus of Linz, Austria.

The first place film, *Euphorie*, was made by Gunter Pofertl and Rainer Hamedinger using a Eumig Mini 3 and a Canon 814E super 8mm cameras. The film follows a group of divers as they explore a cave in the Adriatic near the island of Krk, Yugoslavia.

The second place film, *Happy Diving*, explores the reefs of the Red Sea along the coasts of North and South Yemen down to Sudan. This film by Rainer Hamedinger was shot with a Canon 814E super 8mm and has a magnetic sound track.

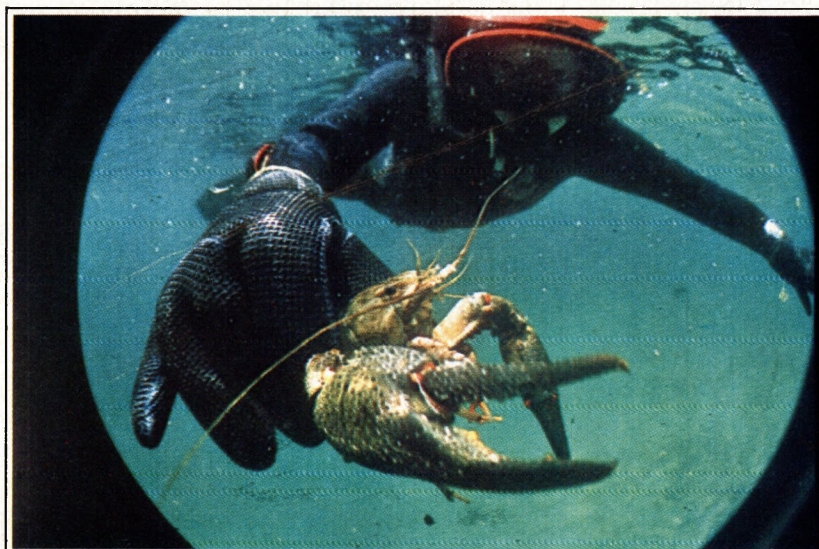
The third place film, *Palm Beach Diver*, was submitted by Edwin L. Granite of Wilmington, Delaware on super 8mm stock. The movie explores the marine life and artificial reefs of West Palm Beach, Florida.



**Second Place, Saltwater Color**  
Michael Goodwin; Laguna Beach, California  
Nikonos II/Subsea Mark 225



**Third Place, Saltwater Color**  
David McCray; Palos Verdes, California  
Nikon F



**First Place, Freshwater Color**  
Wolfgang Hofer; Linz, Austria  
Nikon FZ



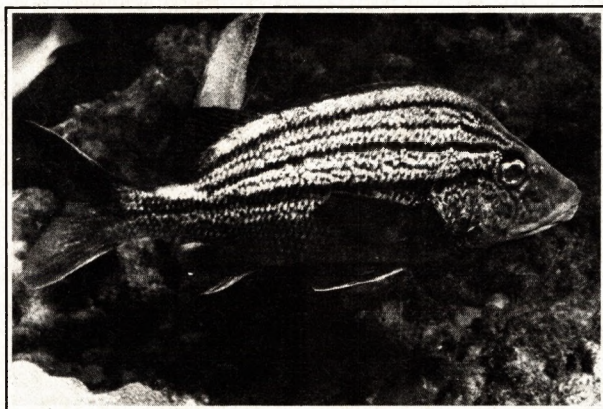
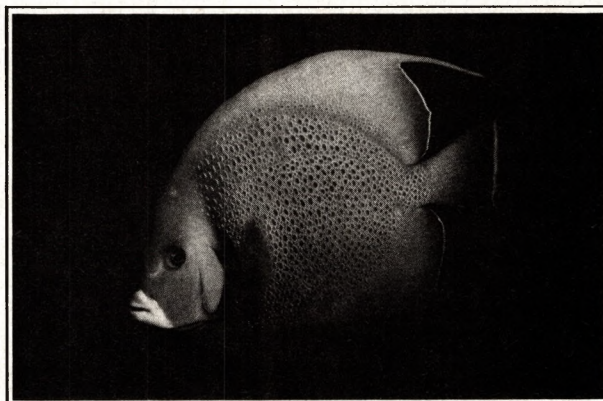
Second Place, Freshwater Color  
Vern Kraemer; St. Louis, Missouri  
Nikonos II/Subsea Mark 100



Third Place, Freshwater Color  
Christopher Chulamanis; Miami, Florida  
Nikonos II

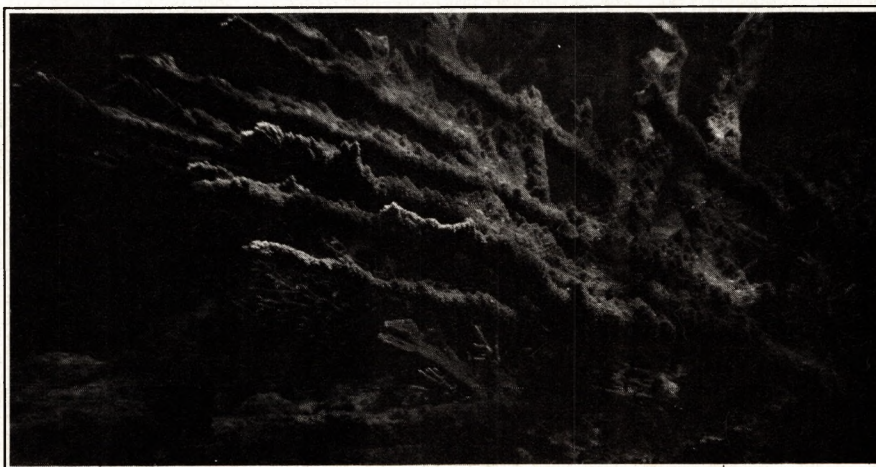


First Place, Saltwater B & W  
Carl Brown; Highland Park, New Jersey  
Nikkormat FTZ



Third Place, Saltwater B & W  
Carl Brown; Highland Park, New Jersey  
Nikkormat FTZ

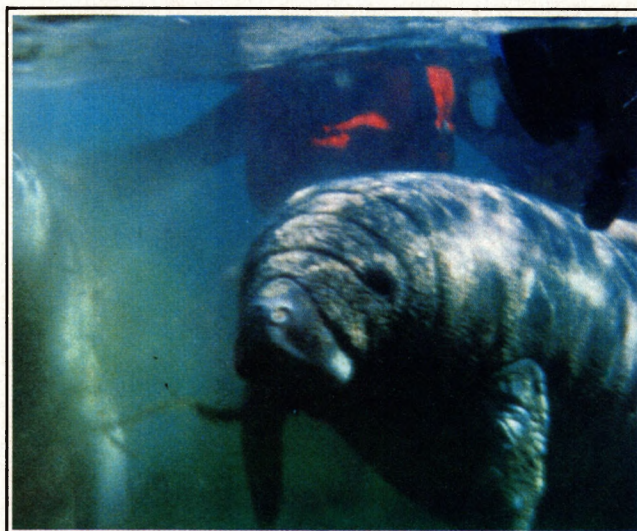
Second Place, Saltwater B & W  
Bette Miller; Iowa City, Iowa  
Nikonos II



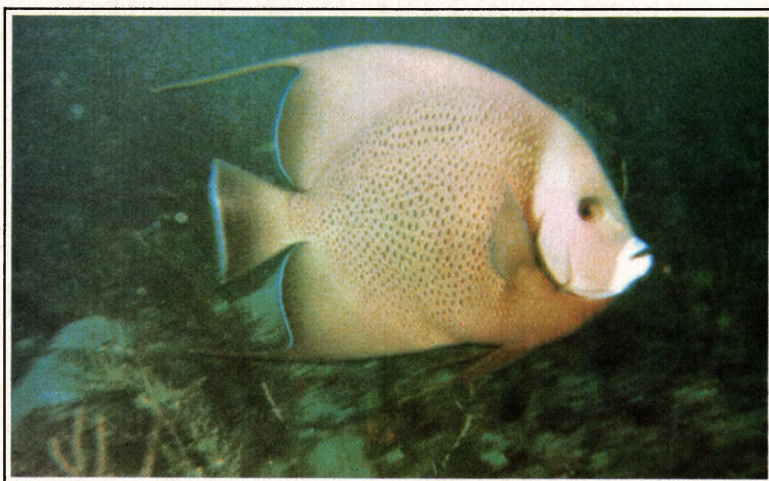




First Place, Fixed Focus Color  
James Kiedinger; Pensacola, Florida  
Kodak Instamatic



Second Place, Fixed Focus Color  
Hal Martin; High Point, North Carolina  
Kodak Pocket 10



Third Place, Fixed Focus Color  
Gary Martin; Orlando, Florida  
Kodak 608, Vivitar 118 strobe



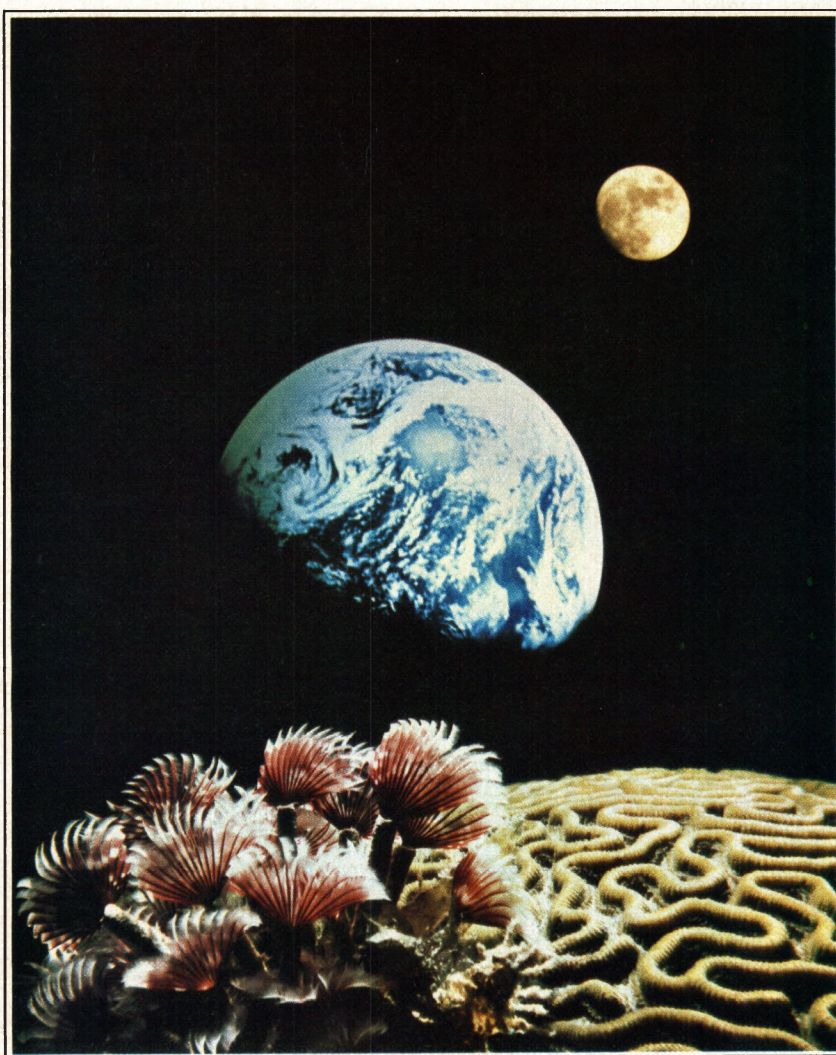
First Place, Freshwater B & W  
Vaughn Bender; Middleton, Wisconsin



Second Place, Creative Photography  
Wolfgang Hofer; Linz, Austria  
Nikon FZ



Third Place, Creative Photography  
Wolfgang Hofer; Linz, Austria  
Nikon FZ



First Place, Creative Photography  
Dennis O'Keefe; Worth, Illinois  
Nikonos



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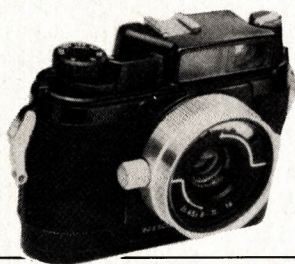
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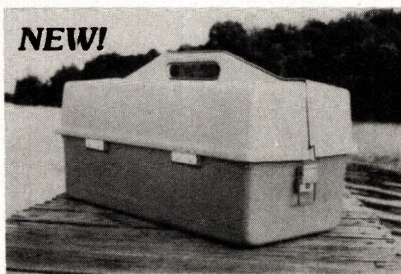
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## First Annual Bahamas Resort Seminar Held

May 16 marked the beginning of the Bahamas' biggest attempt to date to provide complete and concise information on its 24 diving resorts. Attending the Nassau seminar were personnel from the Bahamas Tourist Offices in the U.S., government ecological and customs departments, dive resort owners and operators, and representatives of the diving media.

A major discussion was the protection of the underwater resources of the Bahamas. No spearguns of any kind are allowed in the Bahamas, and enforcement of this law will be stepped up in the near future. The Hawaiian sling, when used by snorkler, is still considered a legal weapon.

If a diver is caught trying to carry a speargun through customs the gun will be temporarily confiscated and returned to him on his departure — at least for now. Technically, the punishment for this infraction is a \$200 fine or six months imprisonment or both. Unless the diving community recognizes that the Bahamas does not want spear guns in its territory, the current light-handed treatment may have to change.

Other laws dealing with the islands' ecology were reviewed. It is illegal to take marine products from crawfish, turtles, corals, living shells, sea plumes, sea fans or conch (among others) unless you are the holder of the government-issued permit.

The government is continuing its parks program with the Nassau Harbor and North Coast Park and the Exuma land and Sea Park. In addition there are several private parks in areas such as Pelican Key Park, Abaco, and the island of San Salvador.

It was revealed that some 35,000 divers visited the Bahamas last year, reinforcing the need for controlled conservation measures. The government estimates that three to four times as many divers could visit the 7,000 islands each year without significantly affecting the region's ecology.

Director of Watersports and Air Recreation for the Bahamas, Athama Bowe, said recently, "The Bahamas is improving each day in its facilities, services and attitudes."

For more information contact: Bahamas Dept. of Tourism, 255 Alhambra Cir., Suite 425, Coral Gables, FL 33134.



# UNDERWATER PHOTOGRAPHY COMPETITION...

Entry Deadline March 31, 1979

1. Saltwater color.
2. Saltwater b&w.
3. Freshwater color.
4. Freshwater b&w.
5. Fixed-focus Photography color.
6. Fixed-focus b&w (For Instamatic type fixed focus camera's only.)
7. Creative photography special processing, infrared, solarization, etc.
8. Movies fresh or saltwater.

Enter now! The second annual Sport Diver Magazine/Undersea Photographic Instructors Association international underwater photography competition is in progress now. Take this opportunity to display your talent in the art of underwater photography and you could win an exciting diving vacation. Finalists will be featured in Sport Diver's third quarter issue of 1979. Contestants may enter one or more of the following categories.

## COMPETITION RULES:

Contest is open to all amateur photographers.

All entries must be sent pre-paid with pre-addressed return envelope and sufficient return postage. All entries will be returned the week of, or before the final winning announcement.

Print size shall be a minimum of 3½x4½ inches, maximum of 8x10 inches, glossy finish and mounted on an 8x10 inch mount board. Entrants name, address and print title must appear on the back of each board.

Slides must be 2x2 inches mounted and inserted in plastic storage protectors with the entrant's name, address, and title.

Movies must be 8mm, super 8, or 16mm with or without sound, 15 minutes or less, with 75% or more exposed underwater and containing entrants name, address, and the film title marked on the container and film leader.

All possible care will be exercised, but no responsibility will be assumed by *Sport Diver* Magazine or UPIA for the loss or damage of entries.

Judging shall be done by the photo competition committee using a basic point system on technique, composition, color, quality and story. Decision of the committee will be final.

Winning photos will be announced in *Sport Diver* Magazine's third quarter issue of 1979. Submission of entry acknowledges right of *Sport Diver* Magazine to publish photographs entered.



Name \_\_\_\_\_ City \_\_\_\_\_  
 Address \_\_\_\_\_ Zip \_\_\_\_\_  
 State \_\_\_\_\_ Country \_\_\_\_\_  
 Full time profession: \_\_\_\_\_  
 Type of U/W camera most often used? \_\_\_\_\_  
 Please indicate amount of entries enclosed for each category.  
 Category 1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_ 8 \_\_\_\_\_  
 Send to: Sport Diver U/W Photo Competition  
 103 Century 21 Dr., Suite 120  
 Jacksonville, Florida 32216



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## Endangered Species Act

A law almost passed unanimously in Congress that would permit a deliberate government decision to extinguish a species of life.

The amendment would empower a proposed review board drawn from 7 Federal agencies to grant exemption from the 1973 act for some government construction projects. Under certain circumstances, the board could permit the construction of a project that would destroy a species of animal or plant life if the benefits outweigh the value of the species.

Spokesmen and environmental organizations and Lynn A. Greenwalt, director of the Fish and Wildlife Service of the Department of the Interior, urged that this amendment and similar ones that have been proposed, not be passed.

However, an opposing array of witnesses, including an electric utility executive, scientists from the Smithsonian Institute, and Senator Jake Garn, Republican of Utah, argued that the act was too inflexible as now written.

Senator Garn offered an even stronger amendment. This proposal would permit a state's governor to waive the Federal act of no practical alternative to the destruction of a species was available. Senator Garn also added, "I frankly don't give a damn if a 14-legged bug or the woundfin minnow live or die."

The man who is partially responsible for the impasse of the amendment is Professor Zygmunt J. B. Plater who initiated a lawsuit to block the completion of the Tellico Dam on the Little Tennessee River.

Mr. Plater and others sued the Tennessee Valley Authority on grounds that the closing of the dam would violate the Endangered Species Act by destroying the critical habitat of the snail darter, a fish about two inches long that can exist only in flowing water.

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# The Taylors TODAY

**Story and Photography  
by Richard H. Stewart**

They are undoubtedly the most celebrated diving couple in the world. Ron and Valerie Taylor have, through their incessant photographic work, become almost synonymous with our most memorable images of dangerous marine life. Ron's pictures of Val holding or hand-feeding morays, venomous sea snakes and of course, sharks, have appeared on the covers of dozens of magazines, and the two have participated in virtually every major shark-filming expedition to date.

It is their work with sharks, particularly the great white, which has earned them the most recognition. Their early vicarious experiences with the great white through newspaper stories and swimming in the net pools of their hometown, Sydney, Australia, led both to a desire to meet the magnificent predator face to face. So, after Valerie Heighes began diving with Ron Taylor in 1960, it was natural for their work to focus on the sea's least affable creatures, and eventually, on the great white.

In 1962 the pair were married and in that same year, the NBC network broadcast their film, *Sharkhunters*. From their childhood the two had been conditioned by society to view the shark as an enemy, one to be hunted and



destroyed. This was sometimes reflected in their films, but slowly, a growing realization of the grace and beauty of these "wolves of the sea" began to infect their work.

In 1964 Ron, driven by a compulsion to film the great white in its natural habitat, set out on an expedition with Alf Dean. Dean, an Australian fisherman, holds the world record for the largest white shark caught on rod-and-reel (2,664 pounds). Also aboard were Brian Rodger, Rodney Fox and Henri Bource, all of whom had survived attacks by great whites. By chumming with whale oil and chunks of meat, the men eventually attracted whites. Ron hung backwards from the stern of the boat, his head and shoulders in the water while someone held his feet.

Without the restrictions of a cage, this film put the viewer in the center of a group of viciously feeding whites. The film Ron obtained on this early voyage still ranks among the very best great white footage. It was used by Peter Gimbel to interest Cinema Center Films in financing his *Blue Water, White Death* expedition. When the money came through, Gimbel asked Ron and Val to join his search along with Stan Waterman, and for two years they chased the elusive white from Durban, South Africa, to Dangerous Reef, Australia.

The success of *Blue Water, White Death* led to other film projects for the Taylors, and eventually to a TV series in the United States. *Ron and Valerie Taylor's Innerspace* was aired weekly in 1975.

In it, they exhibited the kind of non-destructive interaction with sea creatures which they longed so desperately to promote. Also, after being so closely linked to the white shark, it allowed them to investigate and film some other subjects including sea lions, sea snakes, rare shells and the whale shark.

This summer Ron and Valerie became involved with the production of the world's first International Shark Tagging Competition, filmed

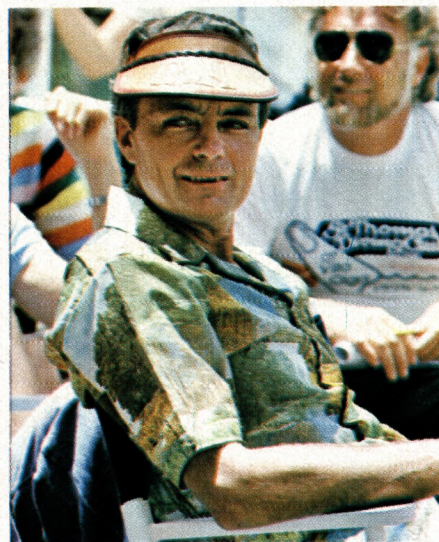
**At the shark-tagging competition this summer, Ron and Valerie charmed the production crew with their easy-going demeanor and quiet professionalism. The Taylors hope to produce another series for U.S. television similar to their *Innerspace* program which was aired in 1975.**



for CBS Sports Spectacular off St. Thomas, Virgin Islands. Along with two other teams they endeavored to implant fisheries identification tags in living, free-swimming sharks. Their affection and affinity for sharks proved the deciding factor as they easily won the competition.

The Taylors are now back home, where Valerie keeps busy collecting specimens with the Australian Ministry of State Environmental Control and promoting her book, *Great Shark Stories*, published by Harper and Row. Ron has been spending most of his time shooting exciting stock footage which may eventually become part of another TV series.

For the diving viewer, tired of endless soap opera supercops, an hour of real-life diving adventure each week would truly be a gift from the sea.





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# Port Royal

## Lost City of the Indies

It dawned hot and sultry, with a cloudless sky and the sea smooth as a mirror. The weather bred uneasiness among many of the inhabitants of Port Royal. Since the founding of the town, earth tremors had occurred almost annually, and in the preceding four decades every one of them had been felt during hot and windless weather. Despite the forecast, most of the citizens of this prosperous town went about their normal business on the day that, for many, would be their last.

Shortly before noon disaster struck. There were three strong quakes in a matter of minutes; the third and most severe was followed by a huge tidal wave that broke the ships' cables in the harbor, wrecked the vessels near the wharves, and caused nine-tenths of the town to sink or slide into the harbor.

A merchant who lived through the disaster described what happened:

"Betwixt eleven and twelve at noon, I being at a tavern, we felt the house shake and saw the bricks begin to rise in the floor, and at the same instant heard one in the street cry, 'An earthquake!' Immediately we ran out of the house . . . whilst on either side of us we saw the houses, some swallowed up, others thrown on heaps; the sand in the streets rose like waves of the sea, lifting up all persons that stood upon it and immediately dropping them down into pits. The small piece of ground whereon sixteen or eighteen of us stood (praise be to God) did not sink."

Old Port Royal was a legend from its beginning to its end. In the closing years of the seventeenth century, tales of its wealth and debauchery circulated throughout the world.

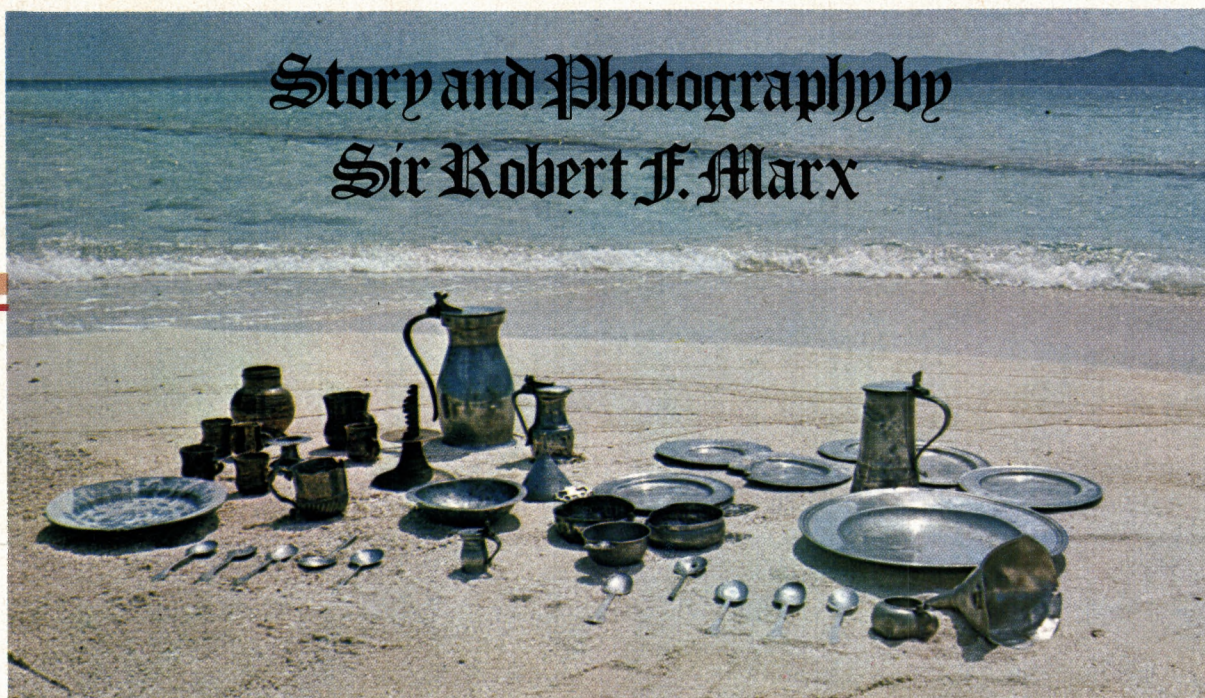


Many everyday objects turned up during the excavation. The gold pocket watch (above) cleaned up as shiny as the day it left the watchmaker, Gibbs of London. Several of the horde of Spanish coins are displayed below. They most likely came from Spanish plate vessels that wrecked near Port Royal. The pewter and silver (opposite page) were recovered from a sunken home.





# Story and Photography by Sir Robert F. Marx



Rumors accorded that in Port Royal fortunes were made in a day and spent in a night. How they were spent is not hard to guess, since it was also said that there was one tavern for every ten men.

The town got its start in 1655 when the English took Jamaica from Spain. On the southeastern coast of the island they found a huge natural harbor, now known as Kingston Harbor. The bay was almost completely enclosed by a long, low sand spit, the Palisadoes, which curved south and west away from the mainland. At the end of the Palisadoes, a low marshy area separated it from a barren sand cay. Within this protective breakwater the harbor could accommodate more than 500 ships. The captors recognized the port's position in the center of the Caribbean made it an ideal spot from which to attack Spanish fleets carrying the gold, silver and precious stones of the New World back to the mother country. Seasoned mariners that they were, the invaders also recognized the strategic importance of the barren, sandy cay. Ships entering the harbor had to round the cay or risk running aground on the reefs blocking the southern and western approaches. The English built their main stronghold on the cay, named it Port Royal, and the boom began.

It started with the arrival of the men who

were the biggest contributors to Port Royal's reputation for boozing, wenching and brawling — the buccaneers. They were invited to make Port Royal their base. The English Crown, fearing a Spanish attempt to recapture Jamaica, granted them letters of marque, authorizing attacks on Spanish ports and shipping, thus making them lawful privateers. Some of the buccaneers, accepting the privateering commissions, served the English Crown as zealously as did the Royal Navy.

The town flourished, and so many people flocked in that the marshy area separating the cay from the Palisadoes was filled in to provide more room for expansion. At the end of the seventeenth century, Port Royal had more than 8,000 inhabitants and 2,000 buildings. Many of the houses were as fine as any in London, and it's no wonder that the town was referred to as "The Storehouse" or "Treasury of the West Indies." Everyone expected the boom to last forever.

Port Royal's advantageous location assured its success as a seaport, even after the departure of the buccaneers in 1675. Making peace with Spain, the English Crown rescinded all letters of marque and made determined efforts to suppress piracy in the Caribbean. The greatest source of wealth soon became the contraband trade with Spanish colonies, but the town had



other irons in the fire too. There was traffic in slaves; commerce with England and the colonies in North America; and the new industry of treasure hunting, or the "wreck trade". In 1682 William Phips, an American from Boston, picked up divers in Port Royal before departing on a treasure hunt that would net him \$3,000,000.

In the space of less than one hour, this important center of industry and commerce slid beneath the Caribbean, with it perished over two thousand residents and eighteen hundred buildings.

A few years after the 1692 disaster, part of the town was rebuilt, but it suffered from one natural disaster after another and few wished to live there. Only the legend survived, and a new legend grew up around it — a city with streets paved with gold, silver and precious stones was waiting intact under the sea for some brave adventurer to seize its treasures.

In 1965, the government of Jamaica announced that a large-scale underwater excavation of Port Royal would begin in January of the following year, and they selected me to direct it. There was a certain amount of

urgency about the project, as planners proposed to turn modern Port Royal into a tourist haven. This proposal entailed dredging a deepwater port there, which would have resulted in the permanent destruction of over half of the sunken city.

When I undertook the excavation of Port Royal, it was not with the expectation of finding any treasures. Salvors were on the scene immediately after the earthquake, recovering valuables from submerged buildings with nets or grappling hooks. I wanted to recover artifacts and relics of old Port Royal, to reconstruct how life was lived in the lost city. I was determined to carry out the excavation in accordance with established archaeological principles. I knew I could not hope for the spectacular results achieved at Pompeii, where archaeologists had uncovered a fantastic, almost intact time capsule of history; my site was less than 300 years old and during those years countless upheavals and hurricanes, to say nothing of man-made disturbances, had ravaged the Port Royal area.

The first part of the job was mapping the site, and I ran into two problems. The first was that the water in Kingston Harbor is so murky

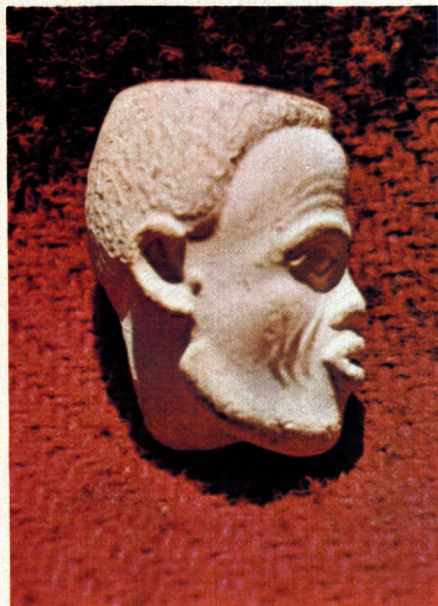
*Silverware from the home of William Blakeshere demonstrates the elegant taste of Port Royal's upper class (right). One of the hundreds of clay pipes found had this figurine as a bowl (far right).*







*A map of Port Royal lies under pieces of eight which survived in a miraculous state of preservation. An apothecary's shop yielded the mortar, pestle and weight set below.*



that aerial photography or any other aids dependent on visibility are of no use. The second problem was the sheer magnitude of the task. Even though I mapped only a portion of the site, an area roughly 200 by 300 feet, the job took months because funds for hiring assistants were not available and I had to work alone. Thanks to good weather I got the job done by the time I was able to assemble a team. I found two assistants; the first, Kenute Kelly was a professional salvage diver, and the second was Wayne Roosevelt.

For diving gear, instead of scuba we used an Aquanaut. I decided on the Aquanaut because it freed us from the need to wear the cumbersome air tanks on our back or surface for air. Selecting the proper excavating equipment had presented difficulties because of my determination to avoid any tool that might endanger fragile objects like glassware, which in view of Port Royal's renowned thirst I expected to find in abundance. Digging by hand would have assured the safety of the artifacts, but given the magnitude of the project and my hope to finish it before I reached the age of 92, I decided on an airlift with a tube four inches in diameter. A screen on the bottom of the tube would prevent objects from being sucked up before the diver could rescue them. A much finer screen on the barge would snag very small

*continued on page 134*



## Crab Wars

The arms of the men who trap stone crabs for a living are like the powerful claws of the creatures they catch: they are thick from hauling in hundreds of barnacle-studded traps each day from the floor of the Gulf of Mexico and burned by the sun to a copper color. And also like the smooth-shelled crab they harvest, the men can turn menacing when provoked.

The shrimpers and crabbers are warring over night rights to the fertile warm waters off the southwestern tip of

Florida, a battle that on some dark nights turns into a shooting war.

At issue is the crabber's complaints that marauding shrimp boats broke with custom last winter and began sweeping their 50-foot nets in shallow waters where the stone crab traps are set. The nets snare traps, tear away surface buoys that mark their location and destroy hundreds of traps every day.

Crabbers are fighting back. One of the crabbers' tricks is to dump coils of wire in the area where traps have been damaged. The wire turns a shrimp net into a snarl and takes hours to unravel.

Members of the local shrimp fleet deny that they are responsible for the damage to the crab traps and pin the blame on shrimpers from the Carolinas, who profess not to know where the traps are.

Gunfire has been passed between the boats but so far no one has been wounded. The Coast Guard and the Florida authorities are trying to resolve the dispute before blood is spilled. The authorities hope that the end of the stone crab season will bring a cooling-off period and that both sides will agree to a compromise before the shrimp boats make their seasonal pass next winter.

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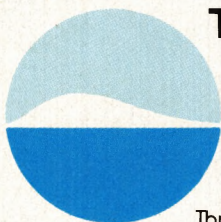
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## Port Royal

*continued from page 131*

items like pins or beads so the four boys manning the barge could retrieve them.

On May 1, 1966, the dig began in a spot about 120 feet from the shore. After removing only a foot of sediment, we turned up one artifact after another, and by the end of the first hour we had filled three baskets with clay smoking pipes, ceramic shards and various coral encrusted iron objects.

For about two weeks we excavated an area roughly fifty feet square. There we found thousands of artifacts from ship-iron nails and caulking tools, brass ship fittings and copper wire to patches for covering holes in the hull and lead draught markers. The evidence pointed to a shipwreck, but where was it? As a rule, no matter how much sediment may cover a wreck, the pile of the ship's ballast protrudes above the sea floor. We didn't find any ballast and who ever heard of a ship without it? The English "broad arrow" marked on the brass and copper artifacts proved they were Crown property and told me they couldn't have come from a ship chandlery, because no ship would have been allowed to possess Crown property.

A week later, we found the keel and ribs of a ship 250 to 300 tons. The size of the cannons nearby indicated that she was a warship. The brick walls found above and below a part of the keel showed that she had sunk during the earthquake. What ship was she?

The only English warship reported lost during the earthquake was the *HMS Swan*. She measured 74 feet in length and with a normal load her depth in the water was ten feet and her weight 305 tons. The most exciting information to come to light about the *Swan* was that she was being careened at the time of the earthquake. Careening necessitates the removal of the ballast and without the ballast, the *Swan* would have been light enough for the tidal wave to fling her from her original position into the middle of town.

Any major discovery like the *Swan* invariably gave us a big lift. The average working day consisted of grueling labor, and on some days the bucket would come up with nothing but clay pipes and ceramic shards. It consisted too of hazards. Hazards like uninvited visitors. More often than not they were upon us before we saw them. One day Kelly felt himself nudged from behind as he was surfacing out of the gloom. An instant later a manta ray 12 feet

*continued page 144*

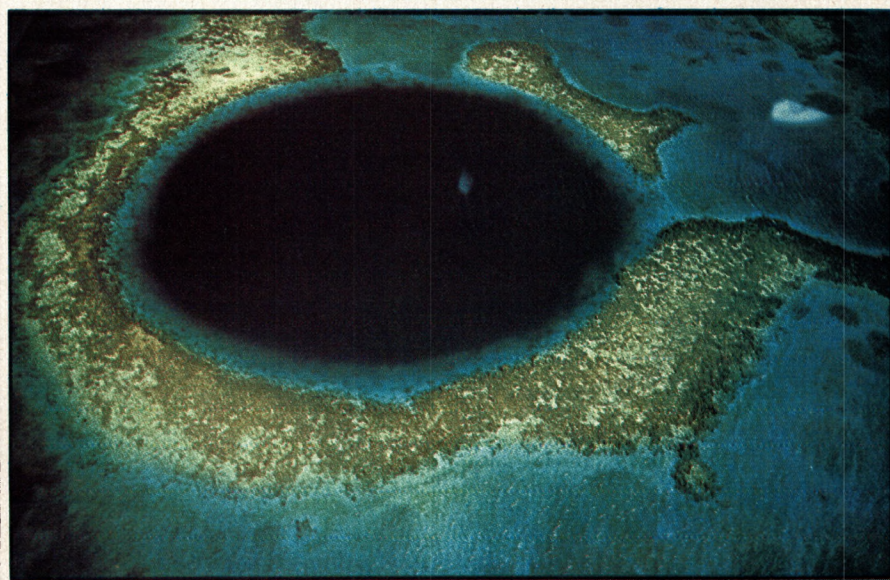
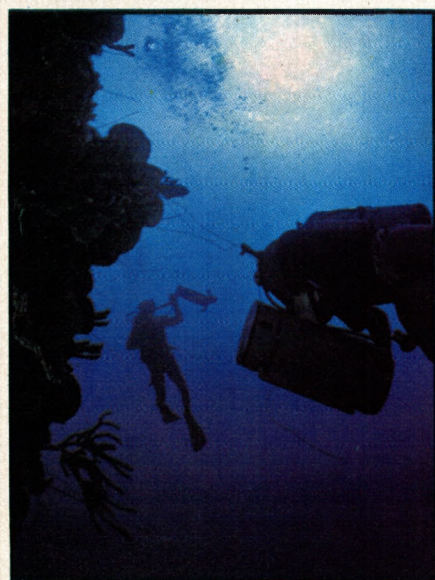


Story and photography by  
Bob Wallace

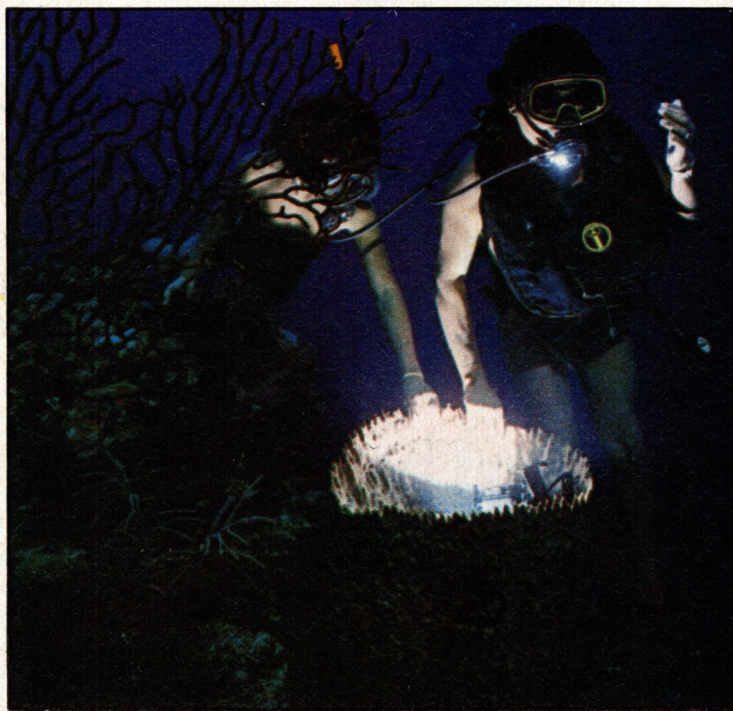
# Filming the Lighthouse Reef

Only minutes away from the famous blue hole of Belize lies one of the Caribbean's most amazing coral reefs.

Little known and mostly unexplored, Lighthouse Reef was recently chosen as one of the locations for a film series on Central America sponsored by Belize Airways, Limited. The reef is located near a small tropical island known as







**Half Moon Cay.** This coral plateau is approximately 50 miles from Ambergris Cay, just off the Belize mainland. On the windward side of the cay is a shipwrecked freighter perched upright on the coral reef, a stark reminder that the sea is unforgiving to the careless navigator. On the lee side, long stretches of white sandy beach separate tropical jungle from a richly populated coral sea. The lighthouse, which overlooks a rugged shoreline, is maintained by members of a native family, Half Moon's only permanent inhabitants.

Before making our first dive, we prepared the filming equipment: two Arriflex 16mm cameras with 10mm and 12mm-120mm zoom lenses, time lapse motor for special effects, Sekonic light meters, one Birns and Sawyer 1,000 watt movie light, one Farallon 360 watt movie light and two Ikelite 100 watt lights. The cameras were loaded with Eastman 7247 color negative film which can be optically printed up to 35mm for general theatre release.

Although quality equipment is essential, the single most important qualification for successful underwater filming is patience. Naturally some expertise in cinematography is required, but often skills can be required through practice. It is the ability to persevere through accidental floodings,

malfunctioning equipment and busted schedules, while keeping your project goal foremost in mind, that makes an underwater photographer.

Another crucial aspect of any film project is the selection of a crew. For our Lighthouse Reef project, I chose Tom Mount, a Miami-based photographer as my primary back-up diver, while Ramon Nuires acted as underwater guide. Ramon's Aqua Lodge on Ambergris Cay served as our base during the 15-day project, and Ramon's knowledge of the reef proved indispensable.

The importance of these crew members really struck home during our first dive, which was planned as an exploratory jaunt. Since the drop off started 40 feet, our maximum depth was set at 100 feet. Tom and Ramon reached the drop-off first, while I monitored camera equipment and lights for any problems before continuing deeper.

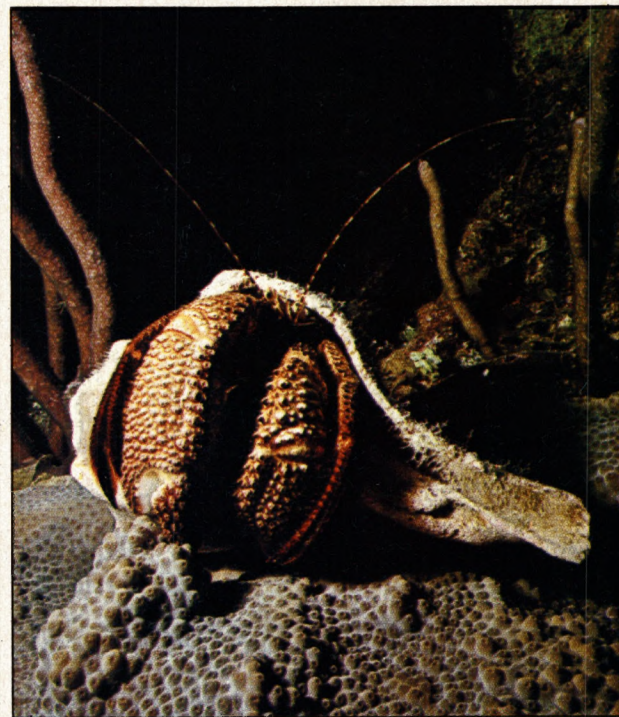
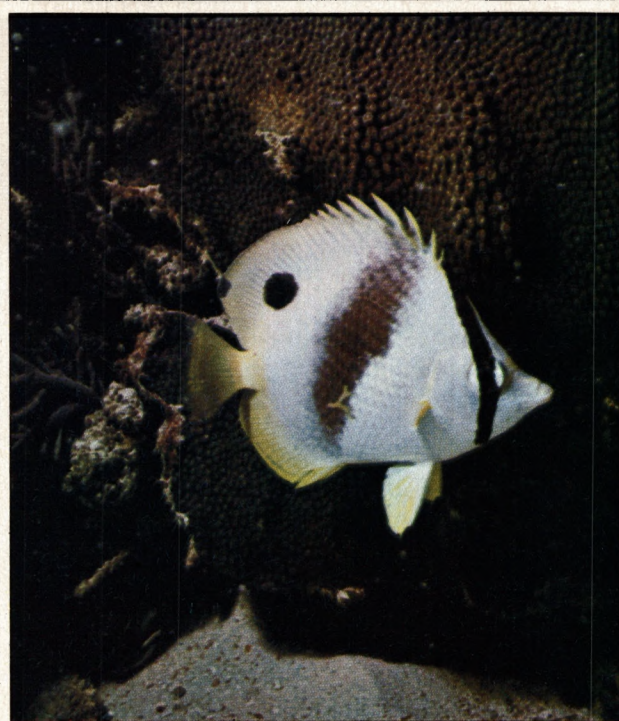




Suspended matter near the surface reduced visibility above the reef, but just below the rim of the wall it suddenly disappeared, leaving everything bright and clear. Ambient light was good and a high sun produced impressive silhouettes of the divers, now above me, gliding along ridges and massive coral outcroppings.

Ramon spotted an exceptionally large gorgonian, and alerting me, I signaled the divers to get into position with the underwater lights. One of the local divers was hovering above us and kicking vigorously to maintain his position. Seconds after we began shooting, sediment from the wall was swirling around us like a snow storm, forcing us to terminate the dive without covering this unusual marine specimen.

Pretty shots are only part of a successful film; there must be continuity and a good story line as well. You must provide the audience with something to hold on to, the search for lost treasure or even a villain to hate, such as "Jaws." Without these



*(Previous page) Lighthouse Reef (below right) off Belize, Central America surrounds a blue hole formation in the open ocean. Experienced diver Tom Mount assisted author during filming project (right).*

*Phil McCorkle's Cessna 185 served as an aerial camera platform during the filming (upper left). Ramon Nulrez (lower left) assisted photographer Bob Wallace and acted as guide for the expedition. Dramatic sponge growth and gorgonians (left) were a major factor in the decision to film at Lighthouse Reef.*



elements of plot, the film, no matter how well done, becomes a boring technical exercise that entertains nothing but the filmmaker's ego.

Our story evolved around the unique ecology of Half Moon Cay, so we spend afternoons topside exploring the island. Half Moon is the home of a rare species of bird which is almost extinct, the red-footed boobie. One of the native elders guided our crew along a narrow foot path through the island's dense vegetation. Close to the nesting area, the path was covered with bird droppings, which transformed the jungle scene into what looked like an Oregon trail after a snow fall. We spotted a large iguana perched in a tree beside a nest of young birds which were still covered with furry down. The boobies appeared uninterested in the iguana, and hardly stirred when we approached the nest for a closer look.

Back at Ramon's Aqua Lodge a special celebration dinner was prepared by Ramon's staff and it was decided that one more day was needed for aerials and a final underwater segment on Lighthouse Reef.



Arrangements were made with Phil McCorkle, owner of the seaplane charter service on Ambergris Cay, to fly us back to the reef for another look. Phil removed the right hand door on his Cessna 185 for clear aerial shots and we piled in for the 30-minute flight. Phil expertly maneuvered his craft along the winding reef near Half Moon Cay, allowing us to film the freighter, then we passed over the blue hole, nearly 1,000 feet in diameter, for several turning shots.

— continued page 143 —

*The barrel sponge (below) is typical of the unusually large organisms that proliferate in the nutrient-rich waters around the reef.*





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1-800-342-7156 (GA); 1-800-841-4443 (others)

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Aaron's Dive Shop, Inc.  
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NASDS-Full Service Store-Instruction. 39  
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Central Pacific Divers  
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Aloha Dive Shop  
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Boat & Shore Dives-Inst. Koko Marina,  
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HI 96814 (808) 941-2284

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2838 Chicago Rd., S. Chicago Hts., IL 60411  
(312) 756-4334

Underseas Scuba Center  
Sales-Service-Instruction-Trips  
226 South Main St., Lombard, IL 60148  
(312) 629-2534

Midwest Diving Specialists, Inc.  
Dacor-Global-Ikelite-Imperial-Poseidon-White  
Stag-PADI Inst.-Air. 203 S. Linden, Normal,  
IL 61761 (309) 452-0222

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Underwater Photography-Sales-Instruction.  
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(312) 917-1060; 6932 W. 16th St., Berwin, IL  
60402 (312) 484-1018

## KANSAS

Topeka Dive Shop  
NAUI-PADI-Air-Tours  
Stauky Marina on Beaver Lake  
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Everything in diving.  
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Scubapro and Dacor Sales. Toledo Bend  
Marina, South Toledo Bend Lake.  
602 W. North St., Leesville, LA 71446  
(318) 328-1368



Harry's Dive Shop, Inc.  
Skin-Scuba-Commercial Equip.-Sales-Service-  
Repairs-Airfills-USCG Cert. Dive Boat.  
4709 Airline Hwy., Metairie, LA 70001  
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Maryland's largest full line pro dive store.  
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Sales-Service-Air-Rentals-Inst.-Boat Trips-  
Tours-Metal Detectors. 8105 Hartford Rd.,  
Baltimore, MD 21234 (301) 668-6866

Port Hole Dive Shop  
Sales-Service-Rentals-In house hydrostatic  
testing-Charter trips. 9635 Reister's Town  
Rd., Baltimore, MD 32055 (301) 363-3388

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(313) 255-0850; 24520 Harper, St. Clair  
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Scuba Center  
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Minneapolis, MN 55410 (612) 925-4818

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PADI Training Facility. 1300 W. 40 Highway,  
Blue Springs, MO 64015 (816) 229-0855

Hughes Dive Company  
Sales-Service-Air-Rentals-Trips-Instruction-  
PADI & SSI-Visual Inspection-Hydros. 437  
Broadway, Cape Girardeau, MO 63701  
(314) 335-0756

West End Diving Centers, Inc.  
Retail-Whlsl-Repairs-Comprs-Instr.-Air 5000.  
11004 Manchester, St. Louis, MO 63122  
(314) 822-3005  
11215 Nat. Bridge Rd., St. Louis, MO 63044  
(314) 731-5003

## NEBRASKA

Fathom Diving School (Clemens Marina)  
Instruction-Sales-Repairs-Air-Rentals-  
Excursions-NASDS-PADI. 1620 E. Overland,  
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Grove, NJ 07009 (201) 857-1748

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NJ 08817 (201) 985-2206

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Sales-Service-Airfills-Open all year. 118 N.  
Main, Pleasantville, NJ 08232 (609) 646-1008

4 Divers, Inc.  
Refills-Repairs-Rentals-Recovery-Salvage-  
PADI-YMCA. 56 Broadway, Pt. Pleasant  
Beach, NJ 08742 (201) 899-7753

Princeton Aqua Sports  
YMCA/NAUI/PADI Inst.-Air-Sales-Rentals-  
Repairs-Hydros VIP-Wreck Dives/Tours.  
306 Alexander, Princeton, NJ 08540  
(609) 924-4240

Marlin Scuba  
Air-Sales-Rentals-Repairs-Indoor Heated Pool-  
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(505) 266-5218

## NEW YORK

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Cougar Sports, Inc.  
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NY 10467 (212) 881-5636

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Brooklyn's Full Service Pro Shop.  
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(212) 648-9897

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(716) 875-6529

Ed's Pro Dive Shop  
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NY 14903 (607) 733-3832

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St., New York, NY 10022 (212) 688-2510

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Rentals. 703 S. Main Street, Urbana, OH  
43078 (513) 653-5741

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Asst. Inst. 6624 S. Lewis, Tulsa, OK 74136  
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## PENNSYLVANIA

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PA 15005 (412) 869-7972 or (412) 266-6834

Anchor Line Diver, Inc.  
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Atlantis Diving Center  
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PA 19127 (215) IV3-8650

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York, PA 17403 (717) 854-3133

## SOUTH CAROLINA

The Wet Shop  
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Charleston, SC 29405 (803) 744-9276

Carolina Divers Center, Inc.  
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North Kings Rd., Greenville, SC 29601  
(803) 277-8550

Divers World Scuba Diving School  
NASDS-PADI Pro Dive Store-Instruction-  
Tours-Sales-Service-Rentals-Wreck Diving  
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29605 (803) 277-8659

## TENNESSEE

Neptune Equipment Corporation  
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(315) 383-8565

## TEXAS

Underwater Sports & Equipment Co.  
Equipment: New & Used-Rentals-Air Refills-  
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75228 (214) 270-9640 Hours 10:30 to 5:30

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Divers Equip. & Sup.-Pure Air-Sales-Serv.-  
Repair-Rentals-Dvg Systems-Resort Travel-  
Salv. 3807 S.W. Blvd., Ft. Worth, TX 76116  
(817) 732-5761

Aqua Trek, Inc.  
YMCA-NAUI-PADI Professional Instruction-  
Sales-Service-Trips-Planning. 804 University  
Blvd., Galveston, TX 77550 (713) 763-0456

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Mall, Pasadena, TX 77502 (713) 477-0236 or  
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Diver's World Inc. (N. Dallas)  
Major Brand Sales-Repairs-Scuba Tours-  
Rentals-U/W Photog-NAUI Inst.-Zodiac  
Inflatable Boat. 632 S. Central Exprwy.  
Richardson, TX 75080 (214) 231-9865

## VERMONT

Northern Divers, Inc.  
"A Professional Dive Shop"-NAUI Inst.-Sales-  
Rental-Repair-Commercial.  
Burlington, VT (802) 862-3881;  
St. Albans, VT (802) 524-4097

## VIRGINIA

Dad's Dive Den  
Equipment Rentals-3000 Air Fills-Repairs-  
Testing-Inst. RFD 2, Box 211, Charlottesville,  
VA 22901 (804) 296-1319

W & W Dive Shop  
Sales-Service-Air-Rentals-Hydros-Visuals-  
YMCA-PADI Inst. 7403 W. Broad St.,  
Richmond, VA 23229 (804) 282-2852

## WASHINGTON

Silent World Divers, Inc.  
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Equipment-Service. 14444 S.E. Eastgate Way,  
Bellevue, WA 98007 (206) 747-8842

Washington Divers  
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Diving tours-Resort and Charters. Dive  
Northwest. 932 N. State, Bellingham, WA  
98225 (206) 676-8029

## WISCONSIN

3 Little Devils Scuba Dive Shop  
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entrance to Devils Lake. Rt. 4, Hwy. 123,  
Baraboo, WI 53913 (608) 356-5866

Fontana Army-Navy Store, Inc.  
Air-Instruction-Sales-Rentals-PADI Training  
Facility. Hwy. 67, Fontana, WI 53125  
(414) 275-2220

## AUSTRALIA

Cairns Barrier Reef Divers  
Sales-Service-Air-Equip.-Rentals-Diving Inst.-  
Super Dive Trips! 47 Shield St., Cairns,  
Australia 4870 Aust. (70) 511889

Heron Island Dive Shop  
Complete Barrier Reef Dive Facility. Trips-  
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Gladstone, Qld. 4680 Australia, 781488  
Telex 49455

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NASDS-Full Service Pro Store/School-  
Scubapro & other major brands-Carib tours-  
Photography by Allen W. Bruce.  
5791 Tecumseh Rd. E., Windsor Ontario,  
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Points West Diving Ltd.  
1073 Roosevelt Crescent  
North Vancouver, B.C. V7P 1M4  
(604) 980-6501

## DOMINICAN REPUBLIC

Aquaventures Diving Tours S.A.  
Pro Dive Shop-PADI training facility-Dive  
tours-Individual and group-Wrecks-Offshore  
diving-Deep sea fishing. P.O. Box 1816, Santo  
Domingo, Dominican Republic 566-7608

## MEXICO

International Scuba Ventures (Mexico)  
Complete dive packages-Individual or group-  
U.S. reservations. Hotel Barracuda,  
Cozumel, Mexico 20002  
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Other States — 1-800-321-6760, ext. 41

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Mexico; Ph. 20627

## PHILIPPINES

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Dive Resort/Tours\* Equip. Sales-Repairs-Air-  
PADI Inst. #1 Space 701, Aurora Blvd.,  
Quezon City, Philippines; #2 908 Pasay Rd.,  
Makati, Rizal, Philippines T-79-86-48

## VIRGIN ISLANDS

Caribbean Divers  
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Service-Rental-Group Rates-Accommoda-  
tions-Fresh Air-Red Hook, St. Thomas, Virgin  
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Air-Sales-Service-Rentals-Photography.  
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(809) 774-8687



## WASHINGTON CURRENTS

*continued from page 73*

death. More practical problems are at hand, they say, like getting more personnel to handle more responsibility.

But if our national oceans program is falling flat, NOAA isn't entirely to blame. President Carter is still light years away from his promised announcement of an exciting U.S. oceans policy. Cutting up NOAA into a dozen pieces isn't going to inject our planners with imagination, although the proposed restructuring may be passed off as a bright new initiative. When you're sinking for the last time it's human nature to grab at anything that floats — even straws.

### Blow to Sexism

For pure romance, "Hurricane Norman" is hard to beat.

Well, get used to it, because it's no more girls-only when it comes to naming a hurricane. Starting this year ten male and eleven female names will be given to big eastern Pacific storms. Starting next year, the co-ed naming will also be used for Atlantic hurricanes.

It's another hurray for Hollywood and Washington's latest bow towards true equality.

The idea apparently originated in the obscure halls of NOAA and the new policy announced by agency Administrator Richard A. Frank.

Male names picked for this year's eastern Pacific list are: Bud (NOAA's second-in-command is *Bud* Walsh), Daniel, Hector, John, Lane, Norman, Fico, Sergio and Vicente — a nice ethnic cross-section.

Lady hurricanes will be Aletta, Carlotta, Amelia, Gilma, Iva, Kristy, Mitiam, Olivia, Rosa, Tara and Willa.

The new names have been accepted by the Hurricane Committee of the World Meteorological Organization.

So let's hear it for good old "Hurricane Norman". Strike another score for equality among the sexes and wink in the direction of poetic license.

### Maryland Wreck Policy

Maryland is moving toward laws to protect historic underwater sites, including some of the oldest and most valuable wrecks in America.

Exact guidelines haven't been drawn, but present plans aim at protecting sites in the Chesapeake Bay and Patuxent River areas.

According to Don Schomette, author and chairman of the Maryland Committee of Underwater Archaeology (MCUA), the idea is to form a "sharing" venture which will include talents of sport divers, archaeologists, salvors and various divers, archaeologists, salvors and marine museum interests.

Schomette explained that Maryland is seeking a law similar to one on the books in South Carolina. That state allows divers to keep their finds if they agree to turn over data to state officials.

Schomette, who authored "Shipwrecks of the Civil War", is also head of Nautical Archaeological Associates, Inc., a non-profit combine of Maryland divers and historians. NAA figures significantly into Maryland's current protective acts. It has conducted extensive bottom survey work and has recorded a variety of finds, including a submerged Indian site.

MCUA will come up with a final proposal for legislative action to be reviewed by the Maryland Department of Natural Resources and passed on to the state legislature for approval.

Schomette says a survey project is needed followed by on-going recovery and documentation. The survey would be relatively inexpensive. Recovery isn't. Schomette says for every \$1 spent to find a site, \$11 will be needed to bring up the artifacts.

As for a possible inventory list, Schomette says there are at least 1500 sites in state waters that pre-date 1900.

### Love Story — Scuba Style

At last, a knight is shining scuba!

Enter Australian journalist John Everingham, the knight. The damsel in distress is his girlfriend, 25-year-old medical student Keo Sirisomphone.

Assigned to Laos where he met Keo, Everingham, 28, was later expelled by Laotian communist authorities after irking them with his copy. Keo, daughter of a middle-level Laotian communist leader, was forced to stay behind.

Everingham crossed into Thailand, but managed to stay in touch with Keo via a series of coded messages. His plan was to bring her to Thailand, but troops stationed along the Mekong River, which divides the countries, made an open swim far too dangerous. Everingham had twice tried and failed.

On the third attempt he decided to go scuba. He donned a tank and octopus regulator and pressed a compass against his facemask so he could navigate in the river's zero-visibility water.

The Mekong flows swiftly and Everingham, who isn't a diver, found out painfully what a stiff current can do. Luck, rather than watermanship, caused him to surface only a few yards from where Keo was waiting. They took time out during the surface interval to "fall into each other's arms" according to reliable reports.

But alas, Everingham found out something he didn't know about Keo: She couldn't swim.

Undaunted, he placed a slightly inflated life vest around her neck, and handed her the octopus. With faces just at the surface of the water they flipped their way to the safety of Thailand.

When they reached shore, Thai officials, often tough on refugees, were friendly and helpful. It is presumed they helped the lovers find happiness ever after.

Ah, love. Ah, courage!

I should have scubaed across the Potomac and rescued Elizabeth Ray from the clutches of Wayne Hayes.

## Lighthouse Reef Continued

*continued from page 138*

During the steep turns above the blue hole, air rushed loudly into the plane, setting an appropriate mood of deep rumbling sounds. The awesome hole reflected colors of deep midnight blue set in a sea of jade green coral like a big blue marble. A polarizing filter over the wide angle movie lens transformed surface reflections into glistening silver. Our final objective, however, was to make a continuous film sequence of a single deep dive on the reef.

As we entered the warm water the quiet sound of the camera motor continued for an uninterrupted six minutes, descending, traversing and hovering in innerspace. It appeared as though nature had carefully selected this spot as a showplace for her most fascinating marine creations. With only minutes to explore this geologic wonder, I felt a desire to continue ever deeper along the sheer wall of the reef, towards the blue-black abyss that opened below. Our time spent, we shut down the lights and camera and headed slowly for the surface above; back to Phil McCorkle's seaplane and to Miami where we would begin the long process of editing, post-production and sound dubbing.



Lighthouse Reef Expeditions  
P.O. Box 1249  
Turlock, CA 95380



# Port Royal

wide embraced him with its wings. Manta rays are playful by nature, but now and then their romps in the water have carried them onto a ship's deck, where they have crushed people with their weight, a fact of which Kelly was well aware. He remained perfectly still until the manta ray, probably deciding that Kelly was not much fun as a playmate, unfolded its wings and swam away.

Another time, I felt myself nudged from behind as I was working on the bottom. Intent on my task, I reached out a hand to push the intruder away and touched something that had the texture of sandpaper. I whirled to find myself looking doom in the eye: A large hammerhead shark was only inches away. Possibly my sudden movement scared it, or perhaps my rubber suit and glass face mask made me look unappetizing. In any case, it disappeared.

Despite the dangers and delays that now and then forced work to a standstill, we made discovery after discovery. An apothecary's pestle and a wooden chest containing twenty-one small glass medicine bottles and two ceramic medicine vases told us we were on the site of an apothecary's shop. Awls, pieces of leather, heels and soles were the signs of a cobbler's shop. A carpenter's shop was indicated by hammers, saws and other wood-working tools. Ship's rigging and fittings, this time not marked with the "broad arrow", were the signs of a ship chandlery. We came upon an area about forty feet long and fifteen feet wide on which bones were piled two and three feet deep. One part of the area contained fish bones and the other the bones of cows, horses, pigs, goats and wild boars. We had found the fish and meat markets.

A high point of the dig was the discovery of two standing buildings. We excavated around the exterior and a portion of the interior of the first building before having to quit for the day. The next morning we were disappointed to see that the walls had collapsed during the night. Soon afterward we came upon the second standing building, and I decided to excavate differently, removing no more than a foot of sediment outside the walls before doing the same inside, thus attempting to keep external and internal pressure equal.

It was a full days' work merely to clear the topmost five feet of the building. The next morning we were happy to see that the building was still standing. It was

the only happy event of the day. The first sour note was the breakdown of the Aquanaut. We descended with scuba gear and had been down only a few minutes when Kelly gashed his hand on a piece of glass. I sent him to the doctor and continued the excavation with Wayne's help. When the building was almost totally excavated, Wayne complained of a sinus headache so I sent him to the surface.

Before stopping work myself, I decided to complete my sketch of the building. I went to examine the wall with the entrance; the next thing I knew I woke up to find myself pinned under the wall, my mask gone and my eyes smarting from the salt and dirt of the water. Fortunately, I had fallen face downward and the wall had pressed my face against the purge button of my regulator so that I had received all the air I needed while unconscious.

As soon as I realized where I was, I tried to push the wall off my back, but it was impossible to move, the section that had fallen on me was a solid mass. I knew I could not count on being rescued, so the only thing to do was to dig straight ahead with my hands. After what seemed years, my fingertips touched the end of the wall. I crawled through the handmade tunnel until my arms and head were free. I could see a glimmer of sunlight filtering down through the murky water as I crawled out a little further, then suddenly my regulator got caught between two bricks in the wall.

I wasted precious minutes of my dwindling air supply in an attempt to free the regulator, but could not. Every second it became harder and harder to breathe. There was only one chance. I jerked my body forward with every ounce of strength I could muster. The regulator snapped, and I found my torso clear of the wall. Another jerk and I blasted off for the surface.

Daily our supply of artifacts petered out. As accustomed as we were to feasts, we became more discouraged about the famine every day. As the morale of the team dropped lower and lower I moved the site of the dig at my wife's suggestion, but it seemed that the jinx had followed us. I was excavating alone with scuba gear while Wayne and Kelly were descending at intervals on their own breath to carry up artifacts. I did not find any artifacts, only pieces of coral that had to be removed by hand. When I surfaced I sent Kelly down to pump and Kelly found something great — four silver Spanish pieces of eight that were so well preserved that all the markings were clearly visible. I asked Kelly whether there were any more coins below, and he said he thought so. He was right. We found hundreds more, all in the same miraculous state of preservation. The

miracle was explained when I found the remains of the wooden chest that had protected the coins over the centuries.

April started off well when we discovered a cook house containing hundreds of kitchen implements such as dinnerware, silverware, bottles, pots and pans. We also found our first gold artifact. By this time we had over fifty large tanks full of coral encrusted iron artifacts. I decided to test my underwater metal detector and grabbed a random piece of coral-encrusted iron and placed it in front of the detector head. Much to my surprise, it gave a non-ferrous reading, and out of curiosity I broke the encrustment apart and discovered a gold ring among some badly oxidized nails.

During the first few weeks of July we excavated the area of another tavern and another cookhouse. Then fortunately or unfortunately, we discovered another big treasure. This time we found several thousand Spanish silver coins in a remarkable state of preservation like the first find, as well as a great amount of silverware, gold rings and cuff links. The most exciting find of all was a beautiful 14-inch-high statue in Chinese porcelain of a woman holding a child in her lap. Research proved that it was the goddess of fertility and childbirth, dating from the Kuan-Yin Dynasty and made in Tu-Hun, China.

Our work was interrupted when word of our find spread. The police were needed not only to keep people from interrupting our work, but also to protect our lives as well. The local criminal element entered the picture and threatened our lives unless we shared the treasure with them. To add to the problem, the opposition party in the local government claimed that the find was much larger than reported in the press and they accused the party in power of stealing the treasure. By the time it came up in Parliament for debate the party in power was almost forced to call a halt to our whole project. The matter was finally resolved and we got back to work again.

Our excavation continued with good results until the end of May, 1968, when I finally called a halt to the project. It was announced officially that the proposed dredging operation would not take place after all, and thus the site was no longer threatened. Still, after two and half years of work, we barely made a dent on the site, as we excavated less than five per cent of the overall area. From the massive amount of archaeological data and information recovered from the site, most experts in the field agree that Port Royal is the most important marine archaeological site in the Western Hemisphere.



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